



TOOELE
ARMY
DEPOT

REVISED FINAL

**DECISION DOCUMENT
GROUP B SUSPECTED RELEASES SWMUs
TOOELE ARMY DEPOT
TOOELE, UTAH**

**Contract No. DACA31-94-D-0060
Delivery Order No. 1**

Prepared for:

TOOELE ARMY DEPOT
Tooele, Utah

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Tooele Army Depot

October 2000

Final Decision Document

for Group B Solid Waste Management Units 4, 19, 26, 29, and 46

The Decision Document

After completion of a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) and Corrective Measure Study (CMS) for the Group B Solid Waste Management Units (SWMUs), the Tooele Army Depot (TEAD) has identified preferred corrective measures alternatives for soil contamination. The following corrective measures are put forth as initial recommendations only, not as final decisions, for public comment.

- ? Building 600, Sandblast Areas (SWMU 4), implement deed restrictions to prevent residential use. [\$5,000]
- ? Buildings 615/617, Sandblast Areas (SWMU 4), implement deed restrictions to prevent residential use. [\$5,000]
- ? AED Demilitarization Test Facility (SWMU 19), apply land use restrictions to prevent residential use. [\$5,000]
- ? DRMO Storage Yard (SWMU 26), implement deed restrictions to prevent residential use. [\$5,000]
- ? Drum Storage Area (SWMU 29), implement deed restrictions to prevent residential use. [\$5,000]
- ? Building 522, Used Oil Dumpsters (SWMU 46), excavate petroleum-contaminated soil and dispose of it off-post. [\$15,300]
- ? Building 602, Used Oil Dumpsters (SWMU 46), excavate petroleum-contaminated soil and dispose of it off-post. [\$22,600]
- ? Building 611, Used Oil Dumpsters (SWMU 46), excavate petroleum-contaminated soil, dispose of it off-post, and implement deed restrictions to prevent residential use. [\$44,700]
- ? Building 619, Used Oil Dumpsters (SWMU 46), excavate petroleum-contaminated soil and dispose of it off-post. [\$22,800]

Figure 2, page 5, of this Decision Document shows the location of each Group B SWMU addressed herein.

If implemented, these proposed corrective measures will significantly reduce risk to human health and the environment.

A public meeting will be held to discuss this Decision Document for the Group B SWMUs on:

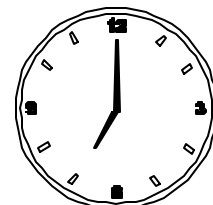
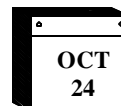
October 24, 2000

Tooele County Courthouse, Tooele, Utah

Poster Session 7:00 PM

Informational Meeting 7:30 PM

For additional information on the meeting, call
Environmental Management Division, Tooele Army
Depot, at (435) 833-3504.



The Community's Role in the Selection Process

How to Submit a Formal Comment

The Army solicits input from the community on the actions proposed in this Decision Document. A comment period from October 12 to November 13, 2000, is established to encourage public participation in this process. At the public meeting, the Army will present the results of the RFI, the CMS, and the Decision Document; answer questions; and accept both oral and written comments. Representatives of the EPA and State of Utah will be present to answer questions.

During the public comment period, you may submit a formal comment in any of the following ways:

1. Mail written comments to:
Tooele Army Depot
Attn: SDSTE-IRE/Larry McFarland
Environmental Management Division
Building T8
Tooele, UT 84074-5000
2. Fax written comments to (435) 833-2839
3. Offer verbal comments during the public hearing to be held on October 24, 2000, 7-9 pm.

Please note that there is a distinction between formal comments received during the public comment period and informal comments received outside of the comment period. Although TEAD will respond to all comments regardless of when they are received, only the formal comments postmarked by November 13, 2000, and TEAD's responses to those comments will be addressed.

Formal comments become part of the official public record. TEAD will consider all formal comments received during the public comment period prior to making the final decision for each site.

All formal comments and TEAD's written responses will be addressed in writing and will accompany the Final Decision Document for the Group B SWMUs.

Copies of the responses will be mailed to anyone who submits a formal comment. In addition, TEAD will announce the decision through the local news media and the mailing list. (A form for requesting addition of your name to the mailing is on the page 51 of this document).

Upon timely request, the comment period may be extended for 30 days. Such a request should be submitted in writing to TEAD. The request must be received no later than November 6, 2000.

For More Information

The Decision Document for the Group B SWMUs highlights information that can be found in greater detail in the RFI Report, the CMS Report, and other available reports. These reports are contained in the TEAD Administrative Record.

The Decision Document will be added to the Administrative Record upon completion. The Army encourages the public to review and comment on these supporting documents, which are available at the following locations:

Tooele Army Depot
Public Affairs Office
T-1 Headquarters Building
Tooele Army Depot, UT 84074

Tooele Public Library
47 East Vine Street
Tooele, UT 84112

Marriott Library
University of Utah
295 South 1500 East
Salt Lake City, UT 84112

BUILDING 600, SANDBLAST AREAS (SWMU 4)

Vehicle maintenance including painting, stripping, and sandblasting using steel grit, ground walnut shells, and glass beads was conducted in Building 600. Wastes included spent sandblast media and paint stripping solutions. Sandblasting equipment has been removed.

Surface and subsurface soil samples were collected to determine if contamination exists as a result of sandblasting activities. No contaminants at levels of concern were detected in these samples.

Based on the sampling conducted at Building 600 at SWMU 4, there are no elevated cancer risks or hazards for the industrial or construction worker at the site. However, elevated risks and hazards were identified for the hypothetical future onsite resident.

The sitewide ecological assessment determined that activities at Building 600 at SWMU 4 are not likely to have harmful effects on plants or animals.

The reasonably anticipated future land use of SWMU 4 is industrial. To protect against future residential use, an evaluation of management measures is required.

Comparative Analysis of Alternatives Building 600, Sandblast Areas (SWMU 4)		
Evaluation Criterion (a)		Alt. 1: Deed restrictions
Technical	Performance	High
	Reliability	High
	Implementability	High
	Safety	High
Human health assessment		High
Environmental assessment		High
Administrative feasibility		High
Cost		\$5,000
Relevant section in Corrective Measures Study		3.1.2

- (a) Rankings indicate the effectiveness of each alternative in meeting the evaluation criteria, relative to other alternatives.

Recommended Corrective Measures Alternative for Building 600 Sandblast Areas (SWMU 4)

Alternative 1:

Deed restrictions to prevent future residential development are the recommended corrective measures for Building 600.

*For more information about Building 600 at SWMU 4,
see pages 17 to 18, and Table 1 on page 37, in this Decision Document.*

BUILDINGS 615/617, SANDBLAST AREAS (SWMU 4)

Vehicle maintenance including painting, stripping, and sandblasting using steel grit, ground walnut shells, and glass beads was conducted in Building 615/617. Wastes included spent sandblast media and paint stripping solutions. Sandblasting equipment has been removed.

Surface and subsurface soil samples were collected to determine if contamination exists as a result of sandblasting activities. No contaminants at levels of concern were detected in these samples.

Based on the sampling conducted at Building 615/617 at SWMU 4, there are no elevated cancer risks or hazards for the military or construction worker at the site. However, elevated risks and blood lead levels were identified for the hypothetical future onsite resident.

The sitewide ecological assessment determined that activities at SWMU 4 are not likely to have harmful effects on plants or animals.

The reasonably anticipated future land use of SWMU 4 is industrial. To protect against future residential use, an evaluation of management measures is required.

Comparative Analysis of Alternatives Buildings 615/617, Sandblast Areas (SWMU 4)		
Evaluation Criterion (a)		Alt. 1: Deed restrictions
Technical	Performance	High
	Reliability	High
	Implementability	High
	Safety	High
Human health assessment		High
Environmental assessment		High
Administrative feasibility		High
Cost		\$5,000
Relevant section in Corrective Measures Study		3.2.2

(a) Rankings indicate the effectiveness of each alternative in meeting the evaluation criteria, relative to other alternatives.

Recommended Corrective Measures Alternative for Buildings 615/617, Sandblast Areas (SWMU 4)

Alternative 1:

Deed restrictions to prevent future residential development are the recommended corrective measures for Buildings 615/617.

For more information about Buildings 615/617 at SWMU 4, see pages 18 to 20, and Table 1 on page 37, in this Decision Document.

AED DEMILITARIZATION TEST FACILITY (SWMU 19)

The AED Demilitarization Test Facility is located southwest of the Ordnance Area, in a remote and undeveloped area of TEAD. It was constructed in 1973 to pilot test new demilitarization equipment and operational procedures.

Surface and subsurface soil samples were collected to determine if contamination exists as a result of site activities. No contaminants of concern were detected in these samples.

Based on the sampling conducted at SWMU 19, there are no elevated cancer risks or hazards for the military or construction worker at the site. However, elevated risks and hazards were identified for the hypothetical future onsite resident.

The sitewide ecological assessment determined that activities at SWMU 19 are not likely to have harmful effects on plants or animals.

The reasonably anticipated future land use of SWMU 19 is military. To protect against future residential use, an evaluation of management measures is required.

Comparative Analysis of Alternatives AED Demilitarization Test Facility (SWMU 19)		
Evaluation Criterion (a)		Alt. 1: Land use restrictions
Technical	Performance	High
	Reliability	High
	Implementability	High
	Safety	High
Human health assessment		High
Environmental assessment		High
Administrative feasibility		High
Cost		\$5,000
Relevant section in Corrective Measures Study		4.2

(a) Rankings indicate the effectiveness of each alternative in meeting the evaluation criteria, relative to other alternatives.

Recommended Corrective Measures Alternative for AED Demilitarization Test Facility (SWMU 19)

Alternative 1:

Land use restrictions are the recommended corrective measures for the AED Demilitarization Test Facility.

*For more information about SWMU 19, see pages 21 to 22,
and Table 1 on page 37, in this Decision Document.*

DRMO STORAGE YARD (SWMU 26)

The DRMO Storage Yard is a 66-acre area that was used for the temporary storage of surplus military material, including small quantities of hazardous materials. It is located in the eastern section of the Maintenance Area. The site is flat and unpaved, with fencing around the perimeter. Several corrugated steel buildings are located in the storage yard.

Surface and subsurface soil samples were collected to determine if contamination exists as a result of storage activities. No contaminants at levels of concern were detected in these samples.

Based on the sampling conducted at SWMU 26, there are no elevated cancer risks or hazards for the industrial or construction worker at the site. However, elevated risks, hazards, and blood lead levels were identified for the hypothetical future onsite resident.

The sitewide ecological assessment determined that activities at SWMU 26 are not likely to have harmful effects on plants or animals.

The reasonably anticipated future land use of SWMU 26 is industrial. To protect against future residential use, an evaluation of management measures is required.

Comparative Analysis of Alternatives DRMO Storage Yard (SWMU 26)		
Evaluation Criterion (a)		Alt. 1: Deed restrictions
Technical	Performance	High
	Reliability	High
	Implementability	High
	Safety	High
Human health assessment		High
Environmental assessment		High
Administrative feasibility		High
Cost		\$5,000
Relevant section in Corrective Measures Study		5.2

- (a) Rankings indicate the effectiveness of each alternative in meeting the evaluation criteria, relative to other alternatives.

Recommended Corrective Measures Alternative for DRMO Storage Yard (SWMU 26)

Alternative 1:

Deed restrictions to prevent future residential development are the recommended corrective measures for the DRMO Storage Yard.

*For more information about SWMU 26, see pages 23 to 24,
and Table 1 on page 37, in this Decision Document.*

DRUM STORAGE AREA (SWMU 29)

The Drum Storage Area was used to store empty drums. Drums were reportedly stored upside down to allow residual material to drain. The Drum Storage area is located near the southern end of the Maintenance Area. The northern part of the SWMU is a triangular-shaped open area of approximately 5 acres. The southern part is a 25-acre area covered by gravel and broken asphalt. Buildings 576 and 589 are located within a fenced enclosure, and Building 591 is located along the eastern edge of the southern part of the SWMU.

Surface and subsurface soil samples were collected to determine if contamination exists as a result of storage activities. No contaminants at levels of concern were detected in these samples.

Based on the sampling conducted at SWMU 29, there are no elevated cancer risks or hazards for the military or construction worker at the site. However, elevated risks and hazards were identified for the hypothetical future onsite resident.

The sitewide ecological assessment determined that activities at SWMU 29 are not likely to have harmful effects on plants or animals.

The reasonably anticipated future land use of SWMU 29 is industrial. To protect against future residential use, an evaluation of management measures is required.

Comparative Analysis of Alternatives Drum Storage Area (SWMU 29)		
Evaluation Criterion (a)		Alt. 1: Deed restrictions
Technical	Performance	High
	Reliability	High
	Implementability	High
	Safety	High
Human health assessment		High
Environmental assessment		High
Administrative feasibility		High
Cost		\$5,000
Relevant section in Corrective Measures Study		6.2

- (a) Rankings indicate the effectiveness of each alternative in meeting the evaluation criteria, relative to other alternatives.

Recommended Corrective Measures Alternative for Drum Storage Area (SWMU 29)

Alternative 1:

Deed restrictions to prevent future residential development are the recommended corrective measures for the Drum Storage Area.

*For more information about SWMU 29, see pages 25 to 26,
and Table 1 on page 37, in this Decision Document.*

BUILDING 522, USED OIL DUMPSTERS (SWMU 46)

Building 522 (south end) is a 0.2-acre area where used oil from vehicle maintenance operations was stored in two dumpsters. The dumpsters were routinely emptied by a recycling contractor, and the oil was taken offsite for disposal.

Based on the sampling conducted at Building 522, SWMU 46, there are no elevated cancer risks or hazards for the military and construction worker, or for the hypothetical future onsite resident. Total petroleum hydrocarbons exceed State of Utah Tier 1 screening levels.

The sitewide ecological assessment determined that the site presents no ecological risk, and that the area is too small to provide a habitat.

The reasonably anticipated future land use of Building 522 at SWMU 46 is military. The petroleum hydrocarbons require corrective action. The estimated volume of contaminated soil is 4 cubic yards.

Comparative Analysis of Alternatives Building 522, Used Oil Dumpsters (SWMU 46)			
Evaluation Criterion (a)		Alt. 1: Monitored natural attenuation	Alt. 2: Excavation, off-post disposal
Technical	Performance	Moderate	High
	Reliability	Moderate	High
	Implementability	Moderate	High
	Safety	High	Moderate
Human health assessment		High	High
Environmental assessment		High	High
Administrative feasibility		High	High
Cost		\$37,800	\$15,300
Relevant section in Corrective Measures Study		7.1.2.1	7.1.2.2

- (a) Rankings indicate the effectiveness of each alternative in meeting the evaluation criteria, relative to other alternatives.

Recommended Corrective Measures Alternative for Building 522, Used Oil Dumpsters (SWMU 46)

Alternative 2:

Excavation of contaminated soil, and off-post treatment or disposal are the recommended corrective measures for the used oil dumpster location at Building 522.

*For more information about Building 522 at SWMU 46,
see pages 27 to 29, and Table 1 on page 37, in this Decision Document.*

BUILDING 602, USED OIL DUMPSTERS (SWMU 46)

Building 602 (southwest corner) is a former collection area where used oil from vehicle maintenance operations was stored in dumpsters. The dumpsters were routinely emptied by a recycling contractor, and the oil was taken offsite for disposal.

Based on the sampling conducted at Building 602, SWMU 46, there are no elevated cancer risks or hazards for the industrial or construction worker, or for the hypothetical future onsite resident. Total petroleum hydrocarbons exceed State of Utah Tier 1 screening levels.

The sitewide ecological assessment determined that the site presents no ecological risk, and that the area is too small to provide habitat.

The reasonably anticipated future land use of Building 602, SWMU 46 is industrial. The petroleum hydrocarbons require corrective action. The estimated volume of contaminated soil is 11 cubic yards.

Comparative Analysis of Alternatives Building 602, Used Oil Dumpsters (SWMU 46)			
Evaluation Criterion (a)		Alt. 1: Monitored natural attenuation	Alt. 2: Excavation, off- post disposal
Technical	Performance	Moderate	High
	Reliability	Moderate	High
	Implementability	Moderate	High
	Safety	High	Moderate
Human health assessment		High	High
Environmental assessment		High	High
Administrative feasibility		High	High
Cost		\$37,800	\$22,600
Relevant section in Corrective Measures Study		7.2.2.1	7.2.2.2

- (a) Rankings indicate the effectiveness of each alternative in meeting the evaluation criteria, relative to other alternatives.

Recommended Corrective Measures Alternative for Building 602, Used Oil Dumpsters (SWMU 46)

Alternative 2:

Excavation of contaminated soil, off-post treatment or disposal are the recommended corrective measures for the used oil dumpster at Building 602.

*For more information about Building 602 at SWMU 46,
see pages 29 to 31, and Table 1 on page 37, in this Decision Document.*

BUILDING 611, USED OIL DUMPSTERS (SWMU 46)

Building 611 (northwest corner) is a former collection area where used oil from vehicle maintenance operations was stored in two dumpsters. The dumpsters were routinely emptied by a recycling contractor, and the oil was taken offsite for disposal.

Based on the sampling conducted at Building 611, SWMU 46, there are no elevated cancer risks or hazards for the industrial and construction worker at the site. An elevated HI was identified for the hypothetical future onsite resident. Total petroleum hydrocarbons exceed State of Utah Tier 1 screening levels.

The sitewide ecological assessment determined that the site presents no ecological risk, and that the area is too small to provide habitat.

The reasonably anticipated future land use of Building 611, SWMU 46 is industrial. The petroleum hydrocarbons require corrective action. The estimated volume of contaminated soil is 24 cubic yards.

Comparative Analysis of Alternatives Building 611, Used Oil Dumpsters (SWMU 46)			
Evaluation Criterion (a)		Alt. 1: Monitored natural attenuation	Alt. 2: Excavation, off- post disposal, deed restrictions
Technical	Performance	High	High
	Reliability	Moderate	High
	Implementability	Moderate	High
	Safety	High	Moderate
Human health assessment		High	High
Environmental assessment		High	High
Administrative feasibility		High	High
Cost		\$58,800	\$44,700
Relevant section in Corrective Measures Study		7.3.2.1	7.3.2.2

- (a) Rankings indicate the effectiveness of each alternative in meeting the evaluation criteria, relative to other alternatives.

Recommended Corrective Measures Alternative for Building 611, Used Oil Dumpsters (SWMU 46)

Alternative 2:

Excavation of contaminated soil, off-post treatment or disposal, and deed restrictions are the recommended corrective measures for the used oil dumpster at Building 611.

*For more information about Building 611 at SWMU 46,
see pages 31 to 33, and Table 1 on page 37, in this Decision Document.*

BUILDING 619, USED OIL DUMPSTERS (SWMU 46)

Building 619 (south alley) is a former collection area where used oil from vehicle maintenance operations was stored in dumpsters. The dumpsters were routinely emptied by a recycling contractor, and the oil was taken offsite for disposal.

Based on the sampling conducted at Building 619, SWMU 46, there are no elevated cancer risks or hazards for the industrial and construction worker or for the hypothetical future onsite resident. Total petroleum hydrocarbons exceed State of Utah Tier 1 screening levels.

The sitewide ecological assessment determined that the site presents no ecological risk, and that the area is too small to provide habitat.

The reasonably anticipated future land use of Building 619, SWMU 46 is industrial. The petroleum hydrocarbons require corrective action. The estimated volume of contaminated soil is 13 cubic yards.

Comparative Analysis of Alternatives Building 619, Used Oil Dumpsters (SWMU 46)			
Evaluation Criterion (a)		Alt. 1: Monitored natural attenuation	Alt. 2: Excavation, off- post disposal
Technical	Performance	Moderate	High
	Reliability	Moderate	High
	Implementability	Moderate	High
	Safety	High	Moderate
Human health assessment		High	High
Environmental assessment		High	High
Administrative feasibility		High	High
Cost		\$50,100	\$22,800
Relevant section in Corrective Measures Study		7.4.2.1	7.4.2.2

- (a) Rankings indicate the effectiveness of each alternative in meeting the evaluation criteria, relative to other alternatives.

Recommended Corrective Measures Alternative for Building 619, Used Oil Dumpsters (SWMU 46)

Alternative 2:

Excavation of contaminated soil, and off-post treatment or disposal are the recommended corrective measures for the used oil dumpster location at Building 619.

*For more information about Building 619 at SWMU 46,
see pages 33 to 35, and Table 1 on page 37, in this Decision Document.*

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INTRODUCTION*

This ***Decision Document*** briefly discusses the preferred ***corrective measures*** and supporting analyses for nine areas within five ***solid waste management units (SWMUs)*** at Tooele Army Depot (TEAD), Tooele, Utah. The SWMUs, including their corresponding Defense Site Environmental Restoration Tracking System (DSERTS) number, and areas are listed below:

- SWMU 4 (Sandblast Areas) – ***TEAD-04***
 - Building 600
 - Buildings 615/617
- SWMU 19 (Ammunition Engineering Directorate (AED) ***Demilitarization*** Test Facility) – ***TEAD-18***
- SWMU 26 (Defense Reutilization Marketing Office (DRMO) Storage Yard) – ***TEAD-20***
- SWMU 29 (Drum Storage Area) – ***TEAD-23***
- SWMU 46 (Used Oil Dumpsters) – ***TEAD-70***
 - Building 522 (south end)
 - Building 602 (southwest corner)
 - Building 611 (northwest corner)
 - Building 619 (south alley)

This document is issued by the U.S. Army (the owner of TEAD), the U.S. Environmental Protection Agency (EPA), and the Utah Department of Environmental Quality (UDEQ; the State regulatory support agency for TEAD) as part of their public participation responsibilities under the ***Resource Conservation and Recovery Act*** (RCRA).

Following the review of information received during the public comment period, the Army and UDEQ will select a final corrective measure for each of the areas addressed herein. The Response to Comments and Final Decision Document and the ***RCRA Post Closure Monitoring and Corrective Action Permit*** (CAP) modification will present the selected corrective measures.

The Decision Document highlights information that can be found in greater detail in the ***RCRA Facility Investigation*** (RFI) Report, the ***Corrective Measures Study*** (CMS) Work Plan, the CMS Report, and other available reports. The Army encourages the public to review and comment on these supporting documents, which are available at the following locations:

Tooele Army Depot
Public Affairs Office
T-1 Headquarters Building
Tooele Army Depot, UT 84074

Tooele Public Library
47 East Vine Street
Tooele, UT 84074

Marriott Library
University of Utah
295 South 1500 East
Salt Lake City, UT 84112

*Terms shown in bold italics are defined in the Word Notebook, pages 40 to 42.

PROGRAM SUMMARY

The program summary reviews historical information on TEAD and presents an overview of the RFI (including the human health *risk assessment* (RA) and the *ecological RA*) and the CMS.

FACILITY BACKGROUND

TEAD is located in Tooele Valley, Tooele County, Utah, immediately west of the City of Tooele (population 14,000) and approximately 35 miles southwest of Salt Lake City. The installation covers 23,473 acres; 1,700 acres (from an original 25,173) were transferred in December 1998 under the *Base Realignment and Closure* (BRAC) program. The surrounding area is largely undeveloped, with the exception of Tooele, Grantsville (population 4,500, north of TEAD), and Stockton (population 400, south of TEAD).

Land use surrounding the Depot includes pasture, cultivation, and rangeland grazing. Figure 1 shows the location of TEAD.

TEAD was originally established as the Tooele Ordnance Depot in 1942. It was renamed the Tooele Army Depot - North Area (TEAD-N) in 1962 and given its present designation (TEAD) in June 1996. Since 1942, TEAD was used for the maintenance and repair of Army vehicles and equipment; the storage, maintenance, and disposal of munitions; and the support of other Army installations in the western United States.

The mission of maintaining and repairing vehicles and equipment was discontinued in 1995. The remaining two missions are expected to continue for the foreseeable future. A portion of TEAD, including the Administration Area and Maintenance Area, was transferred as part of the BRAC Program. SWMUs 4, 26, 29,

and part of 46 are included in the BRAC parcel and are slated for industrial use. SWMU 19 and Building 522 at SWMU 46 are to remain military property.

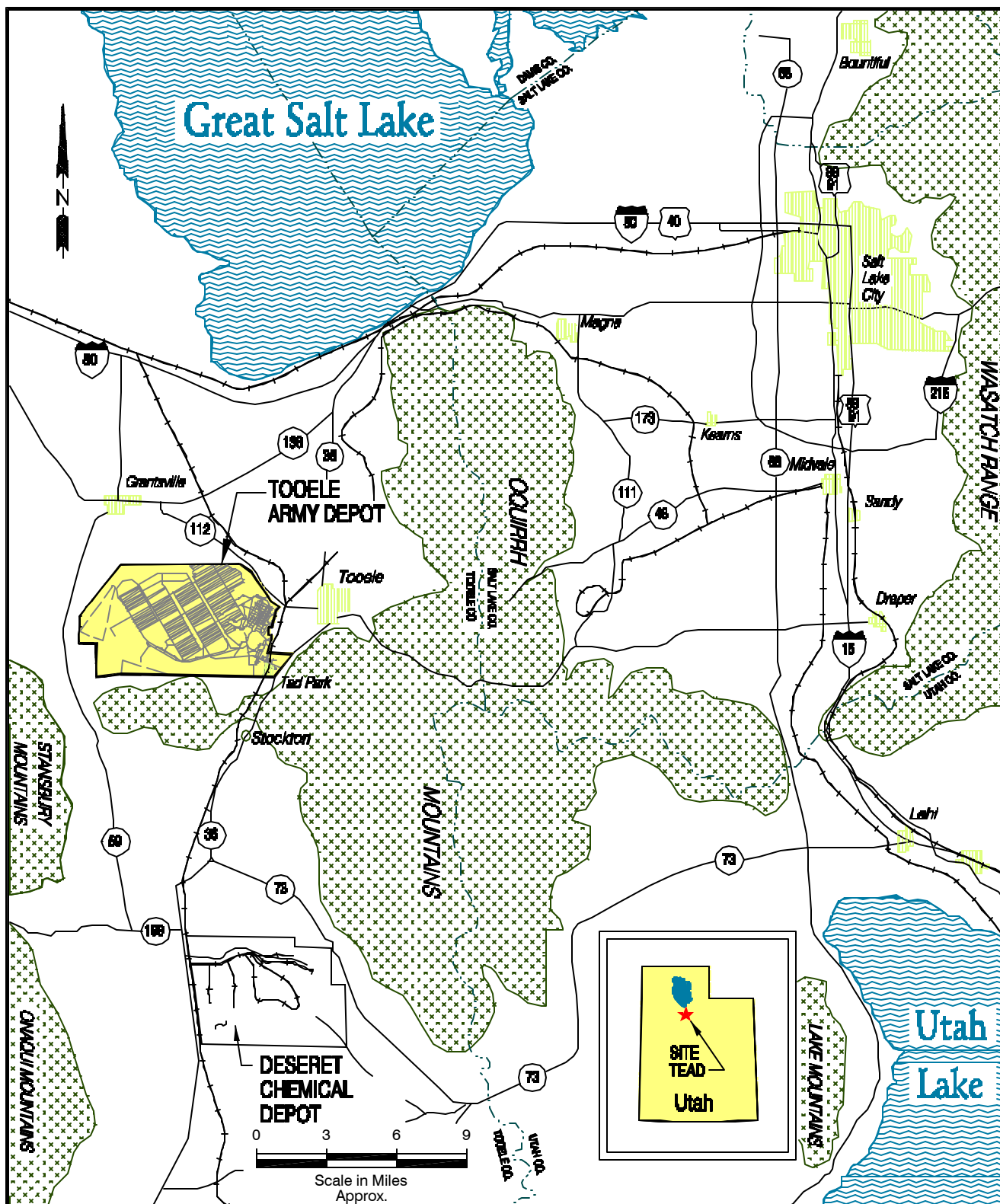
As a result of past operations at TEAD, a variety of known or suspected waste and spill sites have been identified. Environmental investigations from the late 1970s to the present have identified 57 locations referred to as SWMUs.

In October 1990, TEAD was placed on the *National Priority List* (NPL) under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA). A *Federal Facility Agreement* (FFA) between the Army, EPA Region VIII, and UDEQ designated 17 of the SWMUs to be investigated under CERCLA. The remaining SWMUs were to be investigated under RCRA.

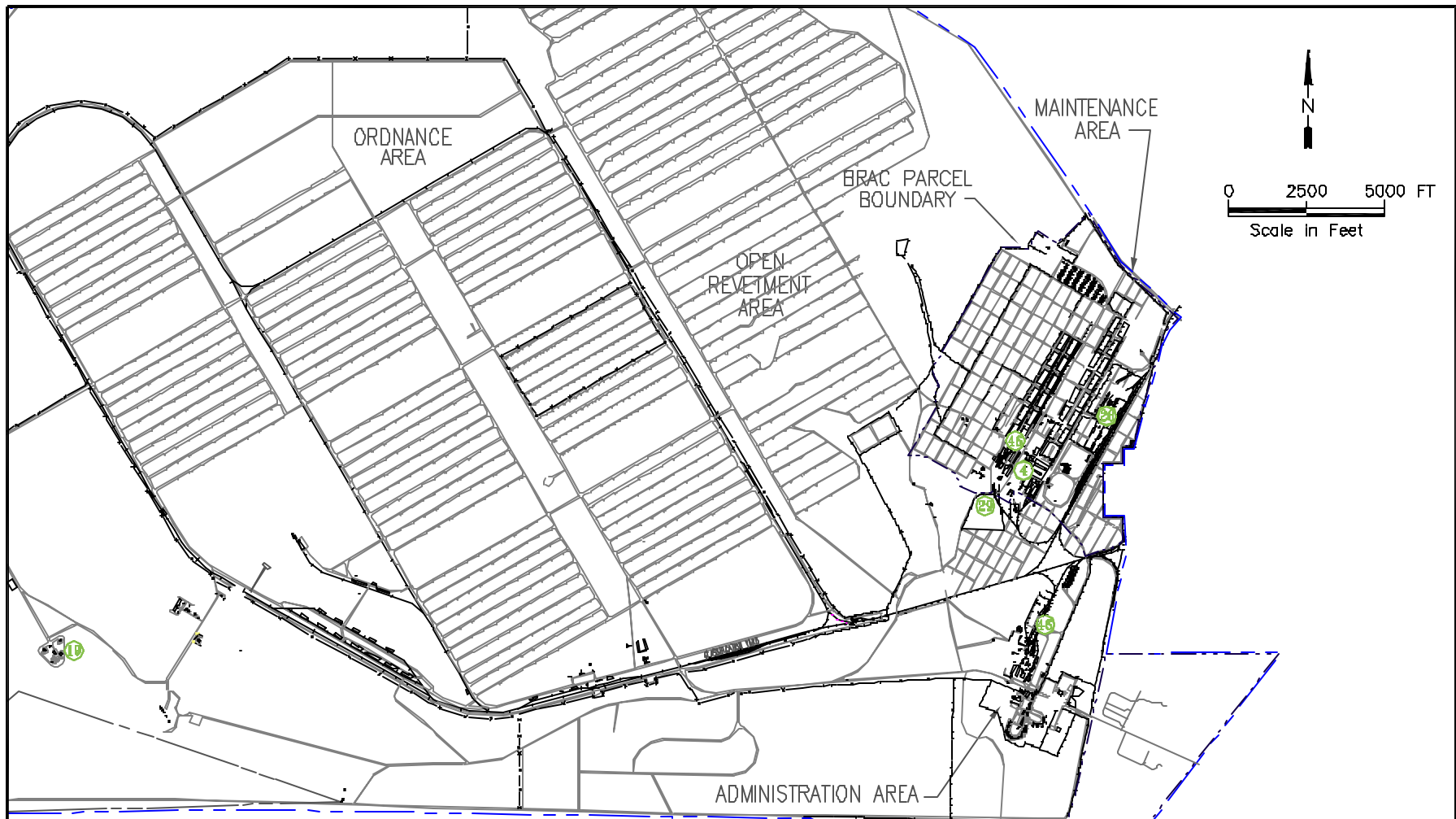
In January 1991, TEAD was issued a RCRA post-closure permit for the Industrial Waste Lagoon (IWL), SWMU 2. The permit included a CAP that required investigation and potential cleanup at 29 SWMUs. Currently, there are 40 SWMUs addressed under the CAP. The five Group B SWMUs discussed in this Decision Document are managed under the RCRA CAP program.

Figure 2 shows the locations of SWMUs 4, 19, 26, 29, and 46 within TEAD. Descriptions of each SWMU are provided on pages 17 through 30.

The following sections present an overview of the RFI, including the human health RA, ecological RA, and the CMS.



SOURCE: RUST E&I, 1995



Legend	
	SWMU LOCATION AND NUMBER
	TEAD BOUNDARY
	BRAC PARCEL BOUNDARY

GROUP B SWMUS

- #4 SANDBLAST AREAS
- #19 AED DEMILITARIZATION TEST FACILITY
- #26 DRMO STORAGE YARD
- #29 DRUM STORAGE AREA
- #46 USED OIL DUMPSTERS

NOTE: THE VARIOUS LOCATIONS OF SWMU 46, WHICH CONSISTS OF 18 DUMPSTER LOCATIONS AND ONE DIESEL OIL SPILL IN THE MAINTENANCE AND ADMINISTRATION AREAS, ARE NOT SHOWN. SEE FIGURES 7-1 AND 7-2 FOR THE LOCATIONS OF SWMU 46.

FIGURE 2
LOCATION OF GROUP B
SUSPECTED RELEASES SWMUs
TOOELE ARMY DEPOT

RCRA FACILITY INVESTIGATION

Investigations were conducted at SWMUs 4, 19, 26, 29, and 46 to evaluate the presence and extent of chemicals potentially released to the environment from past site activities. These investigations included the following:

- Collection and laboratory analysis of soil and groundwater samples to assess SWMU-related contaminant concentrations.
- Comparison of these concentrations to EPA guidelines to evaluate whether they are of potential concern to human health or the environment.
- Comparison of the metals concentrations detected in site samples to **background** metals concentrations. (Metals are naturally occurring in both soil and groundwater.)

- Comparison of the **total petroleum hydrocarbon** (TPHC) concentrations detected in site samples to State guidelines. (There are no EPA criteria for these chemicals.)

The RFI identified **contaminants of potential concern** (COPCs), which are those contaminants:

- Detected at levels above those found naturally in the environment.

– or –
- Detected at levels above EPA guidelines.

The human health RA evaluated potential human health effects due to each of the COPCs.

The ecological RA evaluated potential effects of site contamination on plants and animals. The next two sections describe the RAs.

HUMAN HEALTH RISK ASSESSMENT

In accordance with EPA and State of Utah guidance, the human health RA evaluated potential *cancer risks* and *noncancer health effects* from exposure to the identified COPCs. Risks and effects are considered for the various *receptors* (current Depot worker, current industrial worker, future construction worker, current offsite resident, future adult resident, and future child resident) under different *exposure scenarios*.

Definition of Cancer Risks, Noncancer Health Effects, and Exposure Scenarios

The American Cancer Society has determined that the expected overall likelihood that an adult will develop cancer during a 70-year lifetime is one in three. The assessment of cancer risks for this program calculates the increased likelihood that an individual will develop cancer as a result of long-term site-related exposure to carcinogens over a 70-year lifetime.

According to EPA and UDEQ, a calculated cancer risk is unacceptable if the increased likelihood of getting cancer is greater than one in 10,000. Furthermore, a cancer risk of less than one in 1 million is considered to be acceptable and does not require remedial action. Sites with cancer risks between one in 10,000 and one in 1 million may require further consideration to determine whether *corrective action* is appropriate.

The assessment of noncancer health effects calculates the likelihood of risks other than cancer as a result of long-term exposure to contaminants. This is reported as a *hazard index* (HI). A calculated HI of less than 1.0 indicates that health effects expected from site-related contaminants are acceptable according to EPA and UDEQ standards.

Hazards may include individual weight gain or loss, organ weight changes, or changes in blood chemistry. They are usually determined based on data from animal laboratory studies or from human studies in the workplace. The term “hazards” is used to refer to noncancer health effects.

Blood lead levels are evaluated as a separate health effect and are treated the same as hazards. This evaluation uses an EPA model for lead uptake from the environment (including soil) into the human body. The U.S. Centers for Disease Control and Prevention (CDC) has established a target limit for lead concentration in children of 10 micrograms per deciliter (µg/dL) of blood in less than 5 percent of the model population. When extrapolated to adults, this limit is 11.1 µg/dL. EPA recommends that this model be used when lead levels in soil equal or exceed 400 micrograms per gram of soil (µg/g).

Potential cancer risks and noncancer hazards are calculated for the current Depot worker, current industrial worker, future construction worker, current offsite resident, future adult resident, and future child resident. These receptors may be exposed to COPCs by a variety of pathways or exposure scenarios. Exposure scenarios can be real or hypothetical, current or future.

The hypothetical residential exposure scenario must be evaluated for all sites. This scenario calculates the risks and hazards for an adult and a child living at the identified site full time. It is assumed that the residents are exposed to surface soil through several pathways, including:

- Getting dirt on the skin and absorbing contaminants into the body through the skin (dermal absorption).

- Eating soil directly (children) or inadvertently ingesting soil because hands are unclear (children or adults; ingestion).
- Breathing in dust (inhalation).
- Eating fruits or vegetables grown in contaminated soil (produce ingestion).
- Eating beef from cattle that have grazed on grasses growing in the contaminated soil (beef ingestion).

Using EPA exposure pathway guidelines and site-specific contaminant concentrations, it is possible to calculate the increased likelihood of developing cancer (from carcinogenic contaminants) or being exposed to hazards (from noncarcinogenic contaminants).

Risks and hazards are calculated for an onsite worker under the military land use exposure scenario. This calculation assumes that exposure may occur through ingestion, inhalation, or dermal absorption of surface soil during normal work hours. The worker is not assumed to eat food produced at the site. Also, for purposes of calculating risk, the worker is at the site fewer hours per day, fewer days per year, and fewer years than the resident. These assumptions are based on EPA guidelines and on reasonable information about TEAD workers.

If a SWMU is in the BRAC parcel, the future worker at the site is an industrial worker, not military. EPA provides guidelines for exposure to surface soil (e.g., a 5-day workweek) that differ somewhat from those for a Depot worker, who works 4 days a week. As before, exposure through ingestion, inhalation, and dermal absorption of surface soil are used in the calculation of industrial risks.

A construction worker at any SWMU may encounter subsurface contaminated soil during utility installation, utility maintenance, or construction. This worker may be exposed via ingestion, dermal absorption, or inhalation; however, he or she is not exposed to contaminants in food potentially produced at the site. The construction worker exposure is generally more intense (i.e., inhalation and ingestion rates of soil are higher than for the other exposure scenarios), but of a much shorter duration – which results in comparatively lower relative risks. EPA guidelines are used in calculating the associated cancer risks and hazards for the construction worker.

Regulatory Requirements

The RFI calculated cancer risks and hazards due to COPCs for the following exposure scenarios:

- Actual current and continued military.
- Future construction.
- Future industrial (BRAC parcel).
- Hypothetical future residential adults and children.

The State of Utah Administrative Code (UAC) 315-101, “Cleanup Action and Risk-Based Closure Standards,” also referred to as the “**Risk Rule**,” is used to help determine what kind of corrective measures may be required.

The first part of the Risk Rule requires that the human health RA consider the residential exposure scenario for each SWMU. It also specifies the applicable exposure pathways for this scenario. Although residential use is hypothetical, it is evaluated as the scenario most protective of human health. The Risk Rule considers calculated risk for this scenario to be

unacceptable if the increased likelihood of getting cancer is greater than one in 1 million above the expected rate, if the HI is greater than 1.0, or if the modeled blood lead level is greater than the CDC limit of 10 µg/dL.

If there are no unacceptable risks or hazards under the residential scenario and all other applicable regulatory requirements are met, the site can be closed with no further action. However, corrective measures must be evaluated if the residential scenario presents unacceptable risks or hazards.

The extent of corrective measures required is then determined by considering the actual, **reasonably anticipated future land use** (i.e., continued military use SWMUs 19 and Building 522 in SWMU 46, and industrial use for all remaining BRAC SWMUs). The Risk Rule considers calculated risk for reasonably anticipated future land use scenarios to be unacceptable if the increased likelihood of getting cancer is greater than one in 10,000 above the expected rate, if the HI is greater than 1.0, or if the estimated blood lead level is greater than the CDC limit of 10 µg/dL.

For those sites with unacceptable risks, hazards, or blood lead levels for the reasonably anticipated future land use scenario, corrective action (e.g., excavation or treatment) is evaluated. However, if the calculated risks or health effects are acceptable and all other regulatory requirements are met, only **management measures** (e.g., **land use** or **deed restrictions**), are required. Potential impacts to groundwater are also considered. UAC R315-101-3, the “Principle of Non-Degradation,” states that active corrective measures are required to prevent further degradation of a resource, including groundwater. The results of the ecological RA, potential impacts to groundwater, and the extent and concentrations

of contaminants are also considered in selecting the most appropriate corrective measure.

A site that is determined to present an unacceptable risk or hazard for the reasonably anticipated future land use scenario is corrected to standards developed for that scenario. These standards are less stringent for military, industrial, or construction use than for residential use. Thus, in these three circumstances, contaminants may remain onsite at concentrations that, though lowered, may still present risks to the hypothetical future residential receptor. These **residual risks** are not addressed unless the land use changes (e.g., if one of the SWMUs slated for continuing military use is transferred under BRAC, or if an industrial site becomes residential). If this occurs, the risks and corrective measures must be reevaluated.

Results

As discussed above, the human health RA considered the hypothetical future residential exposure scenario for all areas within SWMUs 4, 19, 26, 29, and 46, even though there are plans to use these sites for continued military (non-BRAC parcel) or industrial purposes (BRAC parcel). The RA identified potential residential risks or hazards above those allowed for the hypothetical future residential scenario under the Risk Rule at SWMUs 4 (both Buildings 600 and 615/617), 19, 26, and 29. The potential risks require the evaluation of corrective measures. At a minimum, management measures must be evaluated. However, additional factors – including regulatory requirements and future risks – may call for corrective measures beyond management only.

Calculated risks, HIs, and blood lead levels were at acceptable levels for residential receptors at SWMU 46 sites, except for an unacceptable residential HI at Building 611. However, TPHC levels in soil at Buildings 522,

602, 611, and 619 exceeded the State of Utah regulatory limit of 10,000 µg/g. These TPHC levels require the evaluation of corrective measures.

To determine the extent of corrective measures required, the RA subsequently evaluated the realistic future land use exposure scenarios, which are:

- Continued military use at SWMU 19 and at Building 522 (SWMU 46)
- Industrial use at the remaining six areas.

Under the hypothetical future residential land use scenario, cancer risks greater than one in 1 million, an HI greater than 1.0, or blood levels above 10 µg/dL were identified at:

- Sandblast Areas (SWMU 4) – Buildings 600 and 615/617
- AED Demilitarization Test Facility (SWMU 19)
- DRMO Storage Yard (SWMU 26)
- Drum Storage Area (SWMU 29)
- Used Oil Dumpster at Building 611 (SWMU 46)

Under the reasonably anticipated future land use scenarios no excess lifetime cancer risks greater than one in 10,000 or HIs greater than 1.0 were identified for any SWMU. A blood lead level greater than 10 µg/dL was identified at the DRMO Storage Yard (SWMU 26).

Because the RFI techniques for estimating blood lead levels have been replaced by improved lead models, the CMS does not rely solely on RFI results for identifying lead problems.

Therefore, based on these results from the human health RA, corrective action is not required at SWMUs 4, 19, 26, and 29. However, management measures – at a minimum – are required at these SWMUs. The TPHC at the Used Oil Dumpsters (SWMU 46) require further action. Additional factors, including regulatory requirements, may require corrective action beyond management measures.

ECOLOGICAL RA

The ecological RA evaluated the potential effects of identified COPCs on plants and animals at nine areas within SWMUs 4, 19, 26, 29, and 46 – focusing on the areas and receptors most at risk. The following steps are included in the RA process:

- Site characterization – which includes surveying site soil, plant life, and animal life.
- Identification of ecological COPCs and their concentrations and toxicity.
- Selection of ecological receptors – the species of plants and animals observed or potentially present at the SWMUs.

- Calculation of ecological risk based on available habitat, COPCs, and ecological receptors.

No adverse impacts to plants or animals or to ecological habitats were identified at any of the nine areas within SWMUs 4, 19, 26, 29, and 46.

Based on these results from the ecological RA, no corrective measures are required to protect plants and animals at these areas.

CORRECTIVE MEASURES STUDY

According to the Risk Rule, SWMUs 4, 19, 26, 29, and 46 (Building 611 only) present unacceptable risks or hazards under the hypothetical future residential land use scenario. No SWMUs present unacceptable health effects for the reasonably anticipated future land use (i.e., military/industrial). SWMU 26 has an unacceptable blood lead level for a construction worker, but the model it was based on has been incorrectly applied for a short duration of construction worker exposure. Lead concentrations that are protective of workers have been calculated and are used to evaluate the need for lead cleanup.

The CMS evaluates corrective measures that are protective of both human health and the environment, and that comply with Federal, State, and local requirements. The CMS process includes:

- Development of *corrective action objectives* (CAOs), which are chemical-specific concentrations for each land use scenario.
- Comparison of the maximum concentrations of COPCs (i.e., chemicals detected at levels exceeding EPA guidelines, as identified in the RFI Report) to CAOs for the reasonably anticipated land use. *Contaminants of concern* (COCs) are contaminants that exceed CAO levels.
- Comparison of the *exposure point concentration* (EPC) for each COC to its CAO as needed.
- Identification of potentially applicable corrective action alternatives.
- Evaluation and comparison of these alternatives.

- Recommendation of the most appropriate alternative for each SWMU.

Corrective Action Objectives

CAOs are used to focus the development of corrective action alternatives on technologies that are likely to achieve the desired target levels. The primary qualitative CAO is to protect human health and the environment. The corrective measure must meet the intent of Federal, State, and local regulations – in this case, the State of Utah Risk Rule (UAC R315-101, including its “Principle of Non-Degradation”), Utah’s Solid Waste Facility Location Standards, Interim Status Requirements for Hazardous Waste Facilities (UAC R315-7), and TEAD’s Part B permit.

CAOs may also be quantitative – i.e., target cleanup concentrations for contaminants; they vary for each land use scenario because of the different receptors and exposure pathways.

No quantitative CAOs are calculated for groundwater. With the exception of an area downgradient of SWMU 29, no groundwater monitoring data were collected as part of the Phase II RFI (SAIC, 1997) for the SWMUs addressed in this Decision Document. All groundwater contamination resulting from sources in the Industrial Area is to be addressed separately as part of SWMU 58 and is not discussed herein.

Identification of Contaminants of Concern

COPCs that exceed CAOs are site-related chemicals that are determined to be responsible for elevated risks under the reasonably anticipated future land use scenario. They are referred to as COCs.

The CAO for chemicals that may cause cancer is the concentration of each compound that results in a potential calculated risk of one in 1 million

– which, for industrial/military CAOs, is much stricter than the Risk Rule’s acceptable value of one in 10,000. Therefore, in some cases, industrial COCs were identified even though the calculated risk is less than one in 10,000. CAOs are consistent with EPA’s acceptable risk range as defined in the National Contingency Plan. The CAO for noncancer-causing chemicals is the concentration of each compound that results in an HI of 1.0. This is equivalent to the Risk Rule’s standard. A lead concentration of 1,800 µg/g is equivalent to a blood lead level of 10µg/dL.

The COCs are then evaluated in conjunction with results of the RA to determine what level of corrective actions must be evaluated. The EPC for each COC is compared to its CAO. If the EPC for a compound is less than its CAO, the maximum concentration of that chemical does not pose a human health risk.

Under the reasonably anticipated future land use, no COCs were identified at SWMU 19 (i.e., levels of contaminants onsite are below CAOs for that land use). However, COCs were identified in soil at the following SWMUs, as noted below:

- ***Polycyclic aromatic hydrocarbons*** (PAHs) and metals at the Sandblast Areas (SWMU 4).
- PAHs at the DRMO Storage Yard (SWMU 26).
- A single PAH at the Drum Storage Area (SWMU 29).
- TPHCs at the Used Oil Dumpsters (SWMU 46) at Buildings 522, 602, and 619.
- TPHCs and lead at Building 611 (SWMU 46).

In accordance with Utah and EPA guidance, these COCs were evaluated for distribution and concentration to determine the need for active corrective measures.

In accordance with the Risk Rule, the following sites require an evaluation of management measures:

- *Sandblast Areas (SWMU 4).*
 - *Building 600*
 - *Building 615/617*
- *AED Demilitarization Test Facility (SWMU 19).*
- *DRMO Storage Yard (SWMU 26).*
- *Drum Storage Area (SWMU 29).*
- *Used Oil Dumpsters (SWMU 46).*
 - *Building 611*

Active corrective measures are evaluated for:

- *Used Oil Dumpsters (SWMU 46).*
 - *Building 522*
 - *Building 602*
 - *Building 611*
 - *Building 619*

Identification and Evaluation of Alternatives

The CMS identifies alternatives for each SWMU that meet the CAOs and are protective of human health and the environment. Each alternative consists of technologies or management measures that address the *media* of concern (e.g., groundwater, soil) and the COCs. More than one alternative may be identified for a particular area.

Alternatives are evaluated and compared for each SWMU to determine which alternative best meets the following criteria:

- **Technical criteria**

Performance – evaluates whether the corrective measures alternative can perform its intended function and meet the CAOs, including compliance with Federal, State, and local regulations. This criterion considers site and waste characteristics, and addresses the useful life of each alternative (i.e., the length of time the alternative maintains its intended level of effectiveness).

Reliability – describes the long-term effectiveness and permanence of each alternative. This criterion evaluates the adequacy of the corrective measures technology based on performance at similar sites, O&M requirements, long-term environmental monitoring needs, and residuals management measures.

Implementability – assesses the technical and institutional feasibility of executing a corrective measures alternative, including constructability, permit and legal/regulatory requirements, availability of materials, etc. This criterion also addresses the length of time from implementation of the

alternative until beneficial effects are realized.

Safety – considers the potential threats to workers, nearby communities, and the environment during implementation of the corrective measure.

- **Human health assessment** – evaluates the extent to which each alternative protects human health. This criterion considers the classes and concentrations of contaminants left onsite, potential exposure routes, and potentially affected populations. Residual contaminant concentrations are also compared to existing criteria, standards, or guidelines.
- **Environmental assessment** – evaluates short-and long-term effects of the corrective measure on the environment, including adverse impacts to environmentally sensitive areas.
- **Administrative feasibility** – considers compliance with applicable Federal, State, and local environmental and public health standards, requirements, criteria, or limitations.
- **Cost** – presents *capital* and annual *operation and maintenance (O&M) costs* for each corrective measures alternative. Capital costs include direct and indirect costs. Annual costs typically include labor, maintenance, energy, and sampling/analysis. For purposes of comparison, costs are presented in terms of *present worth*, which is the current value of a future expenditure. The cost estimates are based on conventional cost estimating guides, vendor information, and engineering judgment.

Recommended Alternatives

For each SWMU, the alternative that best protects human health and the environment, has proven reliable at other sites, and meets regulations is recommended to the public and UDEQ.

A detailed evaluation of alternatives is presented in the next section.

The recommended corrective measures alternatives for the Group B SWMUs are noted below:

- Sandblast Area at Building 600 (SWMU 4)

Deed restrictions to prevent residential use of the site.

- Sandblast Area at Buildings 615/617 (SWMU 4)

Deed restrictions to prevent residential use of the site.

- AED Demilitarization Test Facility (SWMU 19)

Land use restrictions to prevent future residential use of the site.

- DRMO Storage Yard (SWMU 26)

Deed restrictions to prevent future residential use of the site.

- Drum Storage Area (SWMU 29)

Deed restriction to prevent future residential use of the site.

- Used Oil Dumpster at Building 522 (SWMU 46)

Excavation of TPHC-contaminated soil and off-post treatment or disposal.

- Used Oil Dumpster at Building 602 (SWMU 46)

Excavation of TPHC-contaminated soil and off-post treatment or disposal.

- Used Oil Dumpster at Building 611 (SWMU 46)

Excavation of TPHC-contaminated soil and off-post treatment or disposal, and deed restrictions to prevent future residential use of the site.

- Used Oil Dumpster at Building 619 (SWMU 46)

Excavation of TPHC-contaminated soil and off-post treatment or disposal.

SWMU SUMMARIES

The SWMU summaries present background information and results of the RFI, human health and ecological RAs, and CMS for the nine areas within SWMUs 4, 19, 26, 29, and 46.

SWMU 4 (SANDBLAST AREAS)

Site Background – SWMU 4 is in the BRAC parcel. It includes sandblast areas outside Buildings 600 and 615/617, which are located 800 to 1,000 feet apart and separated by other maintenance buildings. Degreasing, sandblasting, stripping, and painting were conducted at these locations. Degreasing wastes, as well as wastes from stripping and painting operations, were drummed and removed for offsite disposal by a hazardous waste contractor.

Results of the RFI, human health and ecological RAs, and CMS for Buildings 600 and 615/617 are summarized below.

Building 600

Summary of RFI – Metals were detected in *surface soil* at levels exceeding background concentrations and were identified as COPCs. *Volatile organic compounds* (VOCs) and *semivolatile organic compounds* (SVOCs) were also detected in surface soil, and were identified as COPCs.

Summary of RAs – The human health RA identified cancer risks greater than the target value of 1×10^{-6} for the hypothetical future onsite residential child and adult receptors, and an elevated HI (i.e., greater than 1.0) for the child receptor. No elevated cancer risks or HIs were identified for the actual current and reasonably anticipated future industrial worker, or for the future construction worker receptors.

The site-wide ecological RA concluded that the COPCs detected in soil at Building 600 present a low ecological risk.

Regulatory Requirements – Because adverse health effects were identified for the hypothetical future onsite adult and child residents, the Risk Rule requires that corrective measures be evaluated for Building 600. However, the identified risks and hazards to the actual current and likely future industrial worker are below 1×10^{-4} and 1.0, which are the levels specified in the Risk Rule as requiring active remediation. Therefore, management measures must be considered.

Identification of Corrective Measures

Alternative – One PAH and lead were identified as COCs in surface soil samples at Building 600, but at concentrations only slightly above corresponding CAOs and in isolated samples. The EPC for each COC – which represents a risk-based exposure level – was compared to the industrial CAO. The PAH EPC is below its CAO, indicating no risk derives from that compound for an industrial scenario. The EPC for lead is just above its CAO, and it occurs in only one sample. Therefore, no active corrective measures are recommended.

The Risk Rule states that management measures must be evaluated for sites that exceed the thresholds of 1×10^{-6} risk or 1.0 HI for the hypothetical future residential land use scenario. Thus, the alternative of deed restrictions to prevent future development was considered for Building 600. Deed restrictions are incorporated into the permanent deed for the site and are legally binding. Deed restrictions on the BRAC property are governed by the **Covenants, Conditions, and Restrictions** (CCRs).

Evaluation of Alternative – The application of deed restrictions at Building 600 meets the evaluation criteria, as detailed below:

- **Technical criteria**
 - **Performance** – Because deed restrictions limit future exposure by preventing residential use of Building 600, they meet the CAOs. Deed restrictions are applicable to both site and contaminant characteristics, and meet the identified goals with no decrease in effectiveness over time.
 - **Reliability** – Deed restrictions are effective over the long term and have been implemented at many sites with positive results. No additional exposure should occur while the restrictions are in place. No management of waste materials, long-term environmental monitoring, or O&M activities are required under this alternative.
 - **Implementability** – Deed restrictions are technically and administratively feasible at Building 600. Because SWMU 4 is part of the BRAC parcel, this alternative requires the placement of legally binding restrictions on the property at the time of transfer from the Army.
 - **Safety** – Because no intrusive activities are required, this alternative poses no potential threats to workers, off-post residential communities, or the environment.
- **Human health assessment** – Restricting future development of the site protects human health by preventing residential exposure to the previously identified contaminants in soil at Building 600.

- **Environmental assessment** – Deed restrictions do not affect the ecological environment.
- **Administrative feasibility** – This alternative meets the specified requirements of UAC R315-101 by preventing future residential development in this area of SWMU 4.
- **Cost** – The estimated present worth cost of implementing this corrective measures alternative is \$5,000.

Recommended Alternative – The application of **deed restrictions** to prevent future development is the recommended alternative for Building 600.

Buildings 615/617

Summary of RFI – Metals were detected in surface and subsurface soil at levels exceeding background concentrations and were identified as COPCs. VOCs and SVOCs were also detected in surface and subsurface soil, and were identified as COPCs.

Summary of RAs – The human health RA identified cancer risks greater than the target value of 1×10^{-6} for the hypothetical future onsite residential child and adult receptors; no elevated HIs were identified. In addition, for the future residential child, the percentage of receptors exceeding the Centers for Disease Control (CDC) blood lead level guideline for lead in soil was greater than the 5 percent target. No elevated cancer risks or HIs were identified for the actual current and reasonably anticipated future industrial worker, or for the future construction worker receptors.

The site-wide ecological RA concluded that the COPCs detected in soil at Buildings 615/617 present a low ecological risk.

Regulatory Requirements – Because adverse health effects were identified for the hypothetical future onsite adult and child residents, the Risk Rule requires that corrective measures be evaluated for Buildings 615/617. However, the identified risks and hazards for the actual current and likely future industrial worker are below 1×10^{-4} and 1.0, which are the levels specified in the Risk Rule as requiring active remediation. Therefore, management measures must be considered.

Identification of Corrective Measures

Alternative – PAHs, lead, and chromium were identified as COCs in surface soil samples at Buildings 615/617. However, the EPCs are below the CAOs for the metals and one PAH. The EPC for the remaining PAH is at a level such that it does not pose a risk to an industrial worker. Therefore, no active corrective measures are recommended.

The Risk Rule states that management measures must be evaluated for sites that exceed the thresholds of 1×10^{-6} for risk and 1.0 for HI under the hypothetical future residential land use scenario. Thus, the alternative of deed restrictions to prevent future development was considered for Buildings 615/617. Deed restrictions are incorporated into the permanent deed for the site and registered with the county. Deed restrictions on the BRAC property are governed by the CCRs.

Evaluation of Alternative – The application of deed restrictions at Buildings 615/617 meets the evaluation criteria, as detailed below:

- Technical criteria
 - Performance – Because deed restrictions limit future exposure by preventing residential use of Buildings 615/617, they meet the CAOs. Deed

restrictions are applicable to both site and contaminant characteristics, and meet the identified goals with no decrease in effectiveness over time.

- Reliability – Deed restrictions are effective over the long term and have been implemented at many sites with positive results. No additional exposure should occur while the restrictions are in place. No management of waste materials, long-term environmental monitoring, or O&M activities are required under this alternative.
- Implementability – Deed restrictions are technically and administratively feasible at Buildings 615/617. Because SWMU 4 is part of the BRAC parcel, this alternative requires the placement of legally binding restrictions on the property at the time of transfer from the Army.
- Safety – Because no intrusive activities are required, this alternative poses no potential threats to workers, off-post residential communities, or the environment.
- Human health assessment – Restricting future development of the site protects human health by preventing residential exposure to the previously identified contaminants in soil at Buildings 615/617.
- Environmental assessment – Deed restrictions do not affect the ecological environment.
- Administrative feasibility – This alternative meets the specified requirements of UAC R315-101 by preventing future residential development in this area of SWMU 4.

- Cost – The estimated present worth cost of implementing this corrective measures alternative is \$5,000.

Recommended Alternative – The application of deed restrictions to prevent future residential development is the recommended alternative for Buildings 615/617.

SWMU 19 (AED DEMILITARIZATION TEST FACILITY)

Site Background – SWMU 19 is not in the BRAC parcel and is slated to remain in use by the military. The AED Demilitarization Test Facility was constructed in 1973, and is located southwest of the ordnance area in a remote and undeveloped area of TEAD. It consists of six small buildings, two burning pans, and a series of protective earthen revetments. The site is used approximately 30 days each year.

Operations at SWMU 19 include experimental or pilot-plant tests to determine if new design demilitarization equipment is functional and to develop operational procedures and techniques. Live ammunition and propellants are frequently used during testing, which has included propagation tests, barricade testing for explosives lines, and burning in pans.

Summary of RFI – Metals were detected in surface soil at levels exceeding background concentrations and were identified as COPCs. Explosives and SVOCs were also detected in surface soil, and were identified as COPCs.

Summary of RAs – The human health RA identified cancer risks greater than the target value of 1×10^{-6} for the hypothetical future onsite residential child and adult receptors, and elevated HIs for both receptors. No elevated cancer risks or HIs were identified for the actual current and reasonably anticipated future Depot personnel and the future construction worker receptors.

The site-wide ecological RA concluded that the COPCs detected in soil at SWMU 19 present a moderate ecological risk.

Regulatory Requirements – Because adverse health effects were identified for the hypothetical future onsite adult and child residents, the Risk Rule requires that corrective

measures be evaluated for this SWMU.

However, the identified risks and hazards to the actual current and likely future Depot personnel are below 1×10^{-4} and 1.0, which are the levels specified in the Risk Rule as requiring active remediation. Therefore, management measures must be considered.

Identification of Corrective Measures

Alternative – No COCs were identified for surface soil samples at SWMU 19. Thus, and in consideration of the results of the human health RA, only management measures are considered for SWMU 19.

Restrictions limiting the future use of this SWMU to industrial (rather than residential) purposes will be incorporated into the TEAD *master land use plan*. The overall purpose of the master plan is to describe and analyze existing facilities, conditions, and future requirements of the installation. Environmental protection (site management) plans are developed to identify land use restrictions, as well as the maintenance and monitoring requirements for other institutional controls (e.g. fencing) that may be implemented. These plans include legal descriptions and maps.

Evaluation of Alternative – The application of land use restrictions at SWMU 19 meets the evaluation criteria, as detailed below:

- Technical criteria
 - Performance – Land use restrictions limit future exposure to the site by preventing the residential use of SWMU 19 and also meet the CAOs. This corrective measures alternative is applicable to both site and contaminant characteristics, and meets the identified goals with no decrease in effectiveness over time.

- Reliability – Land use restrictions are effective over the long term and have been implemented at many sites with positive results. No additional exposure should occur while the restrictions are in place. No management of waste materials, long-term environmental monitoring, or O&M activities are required under this alternative.
 - Implementability – Land use restrictions are technically and administratively feasible at SWMU 19. Because this site is currently under military use, continuing restrictions should not be difficult. This corrective measures alternative meets the CAOs.
 - Safety – Because no intrusive activities are required, this alternative poses no potential threats to workers, off-post residential communities, or the environment.
 - Human health assessment – Restricting future development of the site protects human health by preventing residential exposure to the previously identified contaminants in soil at SWMU 19.
 - Environmental assessment – Land use restrictions do not affect the ecological environment.
 - Administrative feasibility – This alternative meets the specified requirements of UAC R315-101 by preventing future residential development at this site.
 - Cost – The estimated present worth cost of implementing this corrective measures alternative is \$5,000.
- Recommended Alternative** – The application of land use restrictions to prevent future residential development is the recommended alternative for SWMU 19.

SWMU 26 (DRMO STORAGE AREA)

Site Background – The DRMO Storage Yard is within the BRAC parcel. It is a 66-acre salvage yard located in the eastern section of the Maintenance Area. The site is flat and unpaved, with fencing around the perimeter. SWMU 26 was used for the temporary storage of surplus military material, including small quantities of hazardous materials.

Review of historic aerial photographs indicated that the site became an active storage area between 1953 and 1959. An aerial photograph dated 1959 shows the storage yard with visible ground staining, debris piles, and container storage. Ground staining and drum storage were also visible on aerial photographs dated 1966 and 1981. Three ruptured drums were noted during a site inspection in 1987.

Summary of RFI – Metals were detected in surface soil at levels exceeding background concentrations and were identified as COPCs. VOCs and SVOCs were also detected in surface soil, and were identified as COPCs.

Summary of RAs – The human health RA identified cancer risks greater than the target value of 1×10^{-6} for the hypothetical future onsite residential child and adult receptors, and elevated HIs (i.e., greater than 1.0) for both receptors. In addition, the percentage of future residential child receptors exceeding the CDC blood lead level guideline for lead in soil was greater than the target. No elevated cancer risks or HIs were identified for the actual current and reasonably anticipated future industrial worker, or for the future construction worker receptors.

The site-wide ecological RA concluded that the COPCs detected in soil at SWMU 26 present a low ecological risk.

Regulatory Requirements – Because adverse health effects were identified for the

hypothetical future onsite adult and child residents, the Risk Rule requires that corrective measures be evaluated for this SWMU. However, the identified risks and hazards to the actual current and likely future industrial worker are below 1×10^{-4} and 1.0, which are the levels specified in the Risk Rule as requiring active remediation. Therefore, management measures must be considered.

Identification of Corrective Measures

Alternatives – PAHs were identified as COCs in surface soil at SWMU 26, but at concentrations only slightly above corresponding CAOs and in one isolated sample. The EPCs for the PAH are at levels such that they do not pose a risk to an industrial worker. Therefore, no corrective action is required for the COCs.

The Risk Rule states that management measures must be evaluated for sites that exceed the thresholds of 1×10^{-6} risk and 1.0 HI for the hypothetical future residential land use scenario. Thus, the management measures alternative of deed restrictions to prevent future development was considered for SWMU 26. Deed restrictions are incorporated into the permanent deed for the site and registered with the county. Deed restrictions on the BRAC property are governed by the CCRs.

Evaluation of Alternative – The application of deed restrictions at SWMU 26 meets the evaluation criteria, as detailed below:

- Technical criteria
 - Performance – Because deed restrictions limit future exposure by preventing residential use of SWMU 26, they meet the CAOs. Deed restrictions are applicable to both site and contaminant characteristics, and meet

the identified goals with no decrease in effectiveness over time.

- Reliability – Deed restrictions are effective over the long term and have been implemented at many sites with positive results. No additional exposure should occur while the restrictions are in place. No management of waste materials, long-term environmental monitoring, or O&M activities are required under this alternative.
- Implementability – Deed restrictions are technically and administratively feasible at the DRMO Storage Yard. Because SWMU 26 is part of the BRAC parcel, this alternative requires the placement of legally binding restrictions on the property at the time of transfer from the Army.
- Safety – Because no intrusive activities are required, this alternative poses no potential threats to workers, off-post residential communities, or the environment.

- Human health assessment – Restricting future development of the site protects human health by preventing residential exposure to the previously identified contaminants in soil at SWMU 26.
- Environmental assessment – Deed restrictions do not affect the ecological environment.
- Administrative feasibility – This alternative meets the specified requirements of UAC R315-101 by preventing future residential development at this site.
- Cost – The estimated present worth cost of implementing this corrective measures alternative is \$5,000.

Recommended Alternative – The application of deed restrictions to prevent future development is the recommended alternative for SWMU 26.

SWMU 29 (DRUM STORAGE AREA)

Site Background – SWMU 29 is within the BRAC parcel. The Drum Storage Area is located near the southern end of the Maintenance Area. The northern part of the SWMU is a triangular-shaped open area of approximately 5 acres. The southern part is a 25-acre area covered by gravel and broken asphalt. Building 576 (a warehouse) and Building 589 are located within a fenced enclosure, and Building 591 is located along the eastern edge of the southern part of the SWMU.

The Drum Storage Area was used to store empty drums before they were returned to the originating contractor. Because the drums were reportedly stored upside down to allow residual material to drain out, solvents, degreasers, and oils may have been released.

Review of an aerial photograph dated 1953 showed drums stored in the northern part of SWMU 29. No drums were visible on photographs dated 1959 and 1966, and the area appeared to be unoccupied. On a photograph dated 1981, debilitated vehicles were visible along the western edge of the northern part of the SWMU. Drums, cylinders, tank trucks, and lumber were visible in the southern part of SWMU 29 on aerial photographs dated 1953, 1959, 1966, and 1981. The 1959 and 1966 aerial photographs also identified a portion of this area as a “pesticide storage lot.”

During the Phase II RFI, no staining or other signs of contaminant release were observed. The southern part of the Drum Storage Area contained wooden pallets stacked in the center of the fenced area, and vehicles awaiting repair were temporarily stored in the area outside the fence.

Summary of RFI – Metals were detected in surface and subsurface soil at levels exceeding background concentrations and were identified

as COPCs. Also, SVOCs, pesticides, and TPHCs were identified as COPCs in surface and subsurface soil.

Summary of RAs – The human health RA identified cancer risks greater than the target value of 1×10^{-6} for the hypothetical future onsite residential child and adult receptors, and elevated HIs for both receptors. No elevated cancer risks or HIs were identified for the current and likely future industrial worker, or for the future construction worker receptors.

The site-wide ecological RA concluded that the COPCs detected in soil at SWMU 29 present a low ecological risk.

Regulatory Requirements – Because adverse health effects were identified for the hypothetical future onsite adult and child residents, the Risk Rule requires that corrective measures be evaluated for this SWMU. However, the identified risks and hazards to the current and reasonably anticipated future industrial worker and to the future construction worker are below 1×10^{-4} and 1.0, which are the levels specified in the Risk Rule as requiring active remediation. Therefore, management measures must be considered.

Identification of Corrective Measures

Alternative – One PAH was identified as a COC in surface soil at SWMU 29, but at a concentration only slightly above the corresponding CAO and in one isolated sample. The EPC for the PAH is at a level such that it does not pose a risk to an industrial worker. Therefore, no corrective action is recommended for this COC.

The Risk Rule states that management measures must be evaluated for sites that exceed the thresholds of 1×10^{-6} risk and 1.0 HI for the hypothetical future residential land use scenario. Thus, the alternative of deed restrictions to

prevent future development was considered for SWMU 29. Deed restrictions are incorporated into the permanent deed for the site and registered with the county. Deed restrictions on the BRAC property are governed by the CCRs.

Evaluation of Alternative – The application of deed restrictions at SWMU 29 meets the evaluation criteria, as detailed below:

- Technical criteria

- Performance – Because deed restrictions limit future exposure by preventing residential use of SWMU 29, they meet the CAOs developed in the CMS Work Plan (Dames & Moore, 2000). Deed restrictions are applicable to both site and contaminant characteristics, and meet the identified goals with no decrease in effectiveness over time.
- Reliability – Deed restrictions are effective over the long term and have been implemented at many sites with positive results. No additional exposure should occur while the restrictions are in place. No management of waste materials, long-term environmental monitoring, or O&M activities are required under this alternative.
- Implementability – Deed restrictions are technically and administratively feasible at SWMU 29. Because this site is part of the BRAC parcel, this alternative requires the placement of legally binding restrictions on the property at the time of transfer from the Army. This corrective measures alternative meets the CAOs.

- Safety – Because no intrusive activities are required, this alternative poses no potential threats to workers, off-post residential communities, or the environment.

- Human health assessment – Restricting future development of the site protects human health by preventing residential exposure to the previously identified contaminants in soil at SWMU 29.
- Environmental assessment – Deed restrictions do not affect the ecological environment.
- Administrative feasibility – This alternative meets the specified requirements of UAC R315-101 by preventing future residential development at this site.
- Cost – The estimated present worth cost of implementing this corrective measures alternative is \$5,000.

Recommended Alternative – The application of **deed restrictions** to prevent future development is the recommended alternative for SWMU 29.

SWMU 46 (USED OIL DUMPSTERS)

Site Background – Used oil dumpsters, which stored oil from vehicle maintenance operations, are located in 19 separate areas of SWMU 46. Building 522 is not part of the BRAC parcel. The dumpster areas at Buildings 602 (southwest corner), 611 (northwest corner), and 619 (south alley) are located within the BRAC parcel. The dumpsters were routinely emptied by a recycling contractor, and the oil was taken off post for disposal.

The Phase II RFI recommended that four of the 19 dumpster areas be included in the CMS, as noted below:

- Building 522 (south end) – a former collection area, where two used oil dumpsters were located; the 0.2-acre area is surrounded by a berm of railroad ties.
- Building 602 (southwest corner) – a former used oil dumpster location.
- Building 611 (northwest corner) – a former used oil dumpster location.
- Building 619 (south alley) – a former used oil dumpster location.

Building 522 (South End)

Summary of RFI – Metals were detected in surface soil at levels exceeding background concentrations and were identified as COPCs. VOCs, SVOCs, and TPHC were identified as COPCs in surface soil, and SVOCs and TPHC were identified as COPCs in subsurface soil.

Summary of RAs – The human health RA identified no cancer risks for any receptor at this area. Also, no elevated HIs (i.e., greater than 1.0) were identified for any receptor.

The site-wide ecological RA concluded that the COPCs detected in soil at this dumpster area present a low ecological risk.

Regulatory Requirements – The Risk Rule does not require active remediation or management measures at this dumpster area, because human health risk and HI levels calculated for the current and reasonably anticipated future industrial and the hypothetical future residential land use scenarios are below State of Utah target levels. However, the State requires active corrective measures, because TPHC exceeds Utah's 10,000 µg/g screening level for soil.

Identification of Corrective Measures

Alternatives – TPHC was the only COC identified in surface soil. It was detected at a concentration exceeding Utah's 10,000 µg/g screening level. Therefore, the following alternatives are considered for the Building 522 (south end) used oil dumpster:

- Monitored natural attenuation.
- Excavation and off-post disposal of contaminated soil.

Alternative 1 – Monitored Natural Attenuation

Alternative 1 includes quarterly monitoring and documenting the natural attenuation of TPHCs in surface soil at Building 522 (south end) for 2 consecutive years. The annual site review consists of site inspection, quarterly soil sample collection/analysis for TPHCs at the area of concern, assessment of results, and preparation of a letter report documenting the findings and recommendations. The second annual site review recommends either continuation or cessation of site reviews. Site reviews are no longer required only if TPHC concentrations have attenuated to below the State of Utah screening level of 10,000 µg/g. An alternate

corrective measure may be recommended at the 2-year review if it is determined that natural attenuation is not occurring.

Alternative 2 – Excavation and Off-Post Treatment/Disposal

This corrective measures alternative includes excavation of contaminated surface soil to a depth of 1 foot using an excavator, backhoe, or similar equipment. Excavation and confirmatory sampling continue until the concentrations of TPHCs are detected below the target level of 10,000 µg/g.

Based on the results of a soil profile analysis (including total waste and TCLP analysis), the excavated soil is transported to an off-post Subtitle C hazardous waste landfill for direct disposal or to a treatment, storage, and disposal facility (TSDF) for treatment prior to disposal. It is assumed that the contaminated soil is sent to a TSDF for pretreatment by incineration to comply with applicable RCRA Land Disposal Restrictions (LDRs). However, the contaminated soil may also be sent to a local asphalt batching plant. The excavated soil is transported and manifested in compliance with applicable regulations. Clean soil from an on-post borrow location is backfilled into the excavated areas, which are then graded to natural conditions.

Evaluation of Alternatives – The proposed corrective measures alternatives for Building 522 (south end) are evaluated and compared below:

- Technical criteria
 - Performance – Alternative 2 (excavation and off-post treatment/ disposal) immediately reduces the mobility of TPHCs and achieves the target TPHC soil concentration of 10,000 µg/g in less

than 1 week. Under Alternative 1 (MNA), TPHC concentrations may be reduced to acceptable levels through natural degradation processes in 1 to 2 years. Alternative 2 provides a higher level of performance by immediately achieving both qualitative and quantitative objectives.

- Reliability – Each of the alternatives has been implemented successfully at other sites and is considered to be reliable. Alternative 2 requires no O&M or long-term monitoring; Alternative 1 requires annual sampling and analysis to document natural attenuation. Some degree of long-term liability may be associated with Alternative 2.
- Implementability – Both of these alternatives can be readily implemented at Building 522 (south end). The building is located within the Administration Area of TEAD and is scheduled to remain under continued military use.
- Safety – Minimal risks are associated with sampling for Alternative 1 and excavation activities for Alternative 2; however, these risks are easily mitigated using conventional safety measures. The transport of contaminated soil in Alternative 2 presents minor risks to off-post residential communities.
- Human health assessment – There are no unacceptable human health risks or HIs at Building 522 (south end); however, the TPHC levels warrant action. Because Alternative 2 more efficiently removes TPHCs, it is more protective of overall human health.

- Environmental assessment – The sitewide ecological assessment identified no unacceptable risks to ecological receptors as a result of the contaminants in soil at Building 522 (south end).
- Administrative feasibility – Alternative 2 readily meets the target concentration of 10,000 µg/g for TPHC-contaminated soil. Alternative 1 is expected to meet this requirement within 1 to 2 years of implementation. Alternative 2 is expected to meet universal treatment standards (UTSs) for petroleum-contaminated soil before the soil is disposed in a landfill; it also complies with UAC R307-12. Both alternatives meet the requirements of UAC R315-101.
- Cost – The estimated costs of Alternatives 1 and 2 are \$37,800 and \$15,300, respectively.

Recommended Alternative – The **excavation and off-post disposal** of TPHC-contaminated soil is the recommended alternative for the Building 522 (south end) used oil dumpster.

Building 602 (Southwest Corner)

Summary of RFI – Metals were detected in surface soil at levels exceeding background concentrations and were identified as COPCs. VOCs and TPHC were identified as COPCs in surface soil, and TPHC was identified as a COPC in subsurface soil.

Summary of RAs – The human health RA identified no elevated cancer risks or HIs for any receptor in this area.

The site-wide ecological RA concluded that the COPCs detected in soil at this dumpster area present a low ecological risk.

Regulatory Requirements – The Risk Rule does not require active remediation or

management measures at this dumpster area, because human health risk and HI levels calculated for the current and reasonably anticipated future industrial and the future residential land use scenarios are below State of Utah target levels. However, the State requires active corrective measures, because TPHC exceed Utah's 10,000 µg/g screening level for soil.

Identification of Corrective Measures

Alternatives – TPHC was the only COC identified in surface soil. It was detected in several surface soil samples at concentrations exceeding Utah's 10,000 µg/g screening level. Therefore, the following alternatives are considered for the Building 602 (southwest corner) used oil dumpster:

- Monitored natural attenuation.
- Excavation and off-post disposal of contaminated soil.

Alternative 1 – Monitored Natural Attenuation

Alternative 1 includes quarterly monitoring and documenting the natural attenuation of TPHCs in surface soil at Building 602 (southwest corner) for 2 consecutive years. The annual site review consists of site inspection, quarterly soil sample collection/analysis for TPHCs at the areas of concern, assessment of results, and preparation of a letter report documenting the findings and recommendations. The second annual site review recommends either continuation or cessation of site reviews. Site reviews are no longer required only if TPHC concentrations have attenuated to below the State of Utah screening level of 10,000 µg/g. An alternate corrective measure may be recommended at the 2-year review if it is determined that natural attenuation is not occurring.

Alternative 2 – Excavation and Off-Post Treatment/Disposal

This corrective measures alternative includes excavation of contaminated surface soil to a depth of 1 foot using an excavator, backhoe, or similar equipment. Excavation and confirmatory sampling continue until the concentrations of TPHCs are detected below the target level of 10,000 µg/g.

Based on the results of a soil profile analysis (including total waste and TCLP analysis), the excavated soil is transported to an off-post Subtitle C hazardous waste landfill for direct disposal or to a TSDF for treatment prior to disposal. It is assumed that the contaminated soil is sent to a TSDF for pretreatment by incineration to comply with applicable RCRA LDRs. The contaminated soil may also be sent to a local asphalt batching plant. The excavated soil is transported and manifested in compliance with applicable regulations. Clean soil from an on-post borrow location is backfilled into the excavated areas, which are then graded to natural conditions.

Evaluation of Alternatives – The proposed corrective measures alternatives for Building 602 (southwest corner) are evaluated and compared below:

- Technical criteria
 - Performance – Alternative 2 (excavation and off-post treatment/ disposal) immediately reduces the mobility of TPHCs and achieves the target TPHC soil concentration of 10,000 µg/g in less than 1 week. Under Alternative 1 (MNA), TPHC concentrations may be reduced to acceptable levels through natural degradation processes in 1 to 2 years. Alternative 2 provides a higher level of performance by immediately

achieving both qualitative and quantitative objectives.

- Reliability – Each of the alternatives has been implemented successfully at other sites and is considered to be reliable. Alternative 2 requires no O&M or long-term monitoring; Alternative 1 requires minimal sampling and analysis to document natural attenuation. Some degree of long-term liability may be associated with Alternative 2.
- Implementability – Both of these alternatives can be readily implemented at Building 602 (southwest corner). The building is located within the Maintenance Area of TEAD and is part of the BRAC parcel.
- Safety – Minimal risks are associated with sampling for Alternative 1 and excavation activities for Alternative 2; however, these risks are easily mitigated using conventional safety measures. The transport of contaminated soil in Alternative 2 presents minor risks to off-post residential communities.
- Human health assessment – There are no unacceptable human health risks or HIs at Building 602 (southwest corner); however, the TPHC levels warrant action. Because Alternative 2 more efficiently removes TPHCs, it is more protective of overall human health.
- Environmental assessment – The sitewide ecological assessment identified no unacceptable risks to ecological receptors as a result of the contaminants in soil at Building 602 (southwest corner).
- Administrative feasibility – Alternative 2 readily meets the target concentration of

10,000 µg/g for TPHC-contaminated soil. Alternative 1 is expected to meet this requirement within 1 to 2 years of implementation. Alternative 2 is expected to meet UTSs for petroleum-contaminated soil before the soil is disposed in a landfill; it also complies with UAC R307-12. Both alternatives meet the requirements of UAC R315-101.

- **Cost** – The estimated costs of Alternatives 1 and 2 are \$37,800 and \$22,600, respectively.

Recommended Alternative – The excavation and off-post disposal of TPHC-contaminated soil is the recommended alternative for the Building 602 (southwest corner) used oil dumpster.

Building 611 (Northwest Corner)

Summary of RFI – Metals were detected in surface soil at levels exceeding background concentrations and were identified as COPCs. VOCs, SVOCs, and TPHC were identified as COPCs in surface soil, and VOCs and TPHC were identified as COPCs in subsurface soil.

Summary of RAs – The human health RA identified no cancer risks for any receptor at this dumpster area, but did identify an elevated HI for the hypothetical future residential child receptor.

The site-wide ecological RA concluded that the COPCs detected in soil in this area present a low ecological risk.

Regulatory Requirements – The Risk Rule requires management measures, because the human health HI for this dumpster area under the hypothetical future residential child land use scenario is above State of Utah target levels. Moreover, the State requires active corrective

measures, because levels of TPHC exceed Utah's 10,000 µg/g screening level for soil.

Identification of Corrective Measures

Alternatives – Two COCs were identified in surface soil samples at this dumpster area. TPHC was identified in several surface soil samples at concentrations exceeding Utah's 10,000 µg/g screening level. Lead was detected at a maximum concentration exceeding its CAO in one location. The lead at this site is very likely related to the lead contamination at adjacent Group C SWMU 54, Building 611. The lead COC location will be addressed in the Group C clean up effort.

Because of the TPHC exceedances, treatment technologies are considered when developing the following alternatives for the Building 611 (northwest corner) used oil dumpster:

- Monitored natural attenuation and deed restrictions.
- Excavation and off-post disposal of contaminated soil and deed restrictions.

Alternative 1 – Monitored Natural Attenuation and Deed Restrictions

Alternative 1 includes quarterly monitoring and documenting the natural attenuation of TPHCs in surface soil at Building 611 (northwest corner) for 2 consecutive years, and deed restrictions to prevent future residential use of this area of SWMU 46. The annual site review consists of site inspection, quarterly soil sample collection/analysis for TPHCs at the areas of concern, assessment of results, and preparation of a letter report documenting the findings and recommendations. The second annual site review recommends either continuation or cessation of site reviews. Site reviews are no longer required only if TPHC concentrations have attenuated to below the State of Utah

screening level of 10,000 µg/g. An alternate corrective measure may be recommended at the 2-year review if it is determined that natural attenuation is not occurring.

Alternative 2 – Excavation, Off-Post Treatment/Disposal, and Deed Restrictions

This corrective measures alternative includes excavation of contaminated surface soil to a depth of 1 foot at three sample locations and contaminated subsurface soil to a depth of 3.5 feet at one location using an excavator, backhoe, or similar equipment; and also deed restrictions. Excavation and confirmatory sampling continue until the concentrations of TPHCs are detected below the target level of 10,000 µg/g.

Based on the results of a soil profile analysis (including total waste and TCLP analysis), the excavated soil is transported to an off-post Subtitle C hazardous waste landfill for direct disposal or to a TSDF for treatment prior to disposal. It is assumed that the contaminated soil is sent to a TSDF for pretreatment by incineration to comply with applicable RCRA LDRs. However, the contaminated soil may also be sent to a local asphalt batching plant. The excavated soil is transported and manifested in compliance with applicable regulations. Clean soil from an on-post borrow location is backfilled into the excavated areas, which are then graded to natural conditions.

Evaluation of Alternatives – The proposed corrective measures alternatives for Building 611 (northwest corner) are evaluated and compared below:

- Technical criteria
 - Performance – Alternative 2 (excavation, off-post treatment/disposal, and deed restrictions) immediately

reduces the mobility of TPHCs and achieves the target TPHC soil concentration of 10,000 µg/g in less than 1 week. Under Alternative 1 (MNA and deed restrictions), TPHC concentrations may be reduced to acceptable levels through natural degradation processes in 1 to 2 years; deed restrictions limit future exposure by preventing residential use of the site. Alternative 2 provides a higher level of performance by immediately achieving both qualitative and quantitative objectives.

- Reliability – Each of the alternatives has been implemented successfully at other sites and is considered to be reliable. Alternative 2 requires no O&M or long-term monitoring; Alternative 1 requires minimal sampling and analysis to document natural attenuation. Some degree of long-term liability may be associated with Alternative 2.
- Implementability – Alternatives 1 and 2 can be readily implemented at Building 611 (northwest corner). The building is located within the Maintenance Area of TEAD and is part of the BRAC parcel. Alternatives 1 and 2 are rated high because equipment, materials, and contractors are readily available locally. It is estimated that Alternative 2 could be implemented within 1 week; Alternative 1 may take 1 to 2 years. Subsurface utilities may pose a problem for Alternatives 1 and 2 because of soil sampling/excavation at depths of 3.5 feet.
- Safety – Minimal risks are associated with sampling for Alternative 1 and excavation activities for Alternative 2; however, these risks are easily mitigated using conventional safety measures.

The off-post transport of contaminated soil in Alternative 2 presents minor risks to off-post residential communities.

- Human health assessment – Alternatives 1 and 2 are protective of overall human health.
- Environmental assessment – The sitewide ecological assessment identified no unacceptable risks to ecological receptors as a result of the contaminants in soil at Building 611 (northwest corner).
- Administrative feasibility – Alternative 2 readily meets the target concentration of 10,000 µg/g for TPHC-contaminated soil. Alternative 1 is expected to meet this requirement within 1 to 2 years of implementation; however, its feasibility is questionable, and it is rated moderate. Alternative 2 is expected to meet UTSs for petroleum-contaminated soil before the soil is disposed in a landfill; it also complies with UAC R307-12. Both Alternatives 1 and 2 meet the requirements of UAC R315-101.
- Cost – The estimated costs of Alternatives 1 and 2 are \$58,800 and \$44,700, respectively.

Recommended Alternative – Deed restrictions, excavation, and off-post disposal of TPHC-contaminated soil is the recommended alternative for the Building 611 (northwest corner) used oil dumpster.

Building 619 (South Alley)

Summary of RFI – Chromium was detected in surface soil at levels exceeding background concentrations and identified as a COPC. TPHC was identified as COPCs in surface soil and subsurface soil.

Summary of RAs – The human health RA identified no cancer risks for any receptor at this area. Also, no elevated HIs (i.e., greater than 1.0) were identified for any receptor.

The site-wide ecological RA concluded that the COPCs detected in soil at this dumpster area present a low ecological risk.

Regulatory Requirements – The Risk Rule does not require active remediation or management measures at this dumpster area, because human health risk and HI levels calculated for the current and reasonably anticipated future industrial and the hypothetical future residential land use scenarios are below State of Utah target levels. However, the State requires active corrective measures, because TPHC exceeds Utah's 10,000 µg/g screening level for soil.

Identification of Corrective Measures Alternatives – TPHC was the only COC identified in surface soil. It was detected at a concentration exceeding Utah's 10,000 µg/g screening level. Therefore, the following alternatives are considered for the Building 619 (south alley) used oil dumpster:

- Monitored natural attenuation.
- Excavation and off-post disposal of contaminated soil.

Alternative 1 – Monitored Natural Attenuation

Alternative 1 includes quarterly monitoring and documenting the natural attenuation of TPHCs in surface soil at Building 619 (south alley) for 2 consecutive years. The annual site review consists of site inspection, quarterly soil sample collection/analysis for TPHCs at the area of concern, assessment of results, and preparation of a letter report documenting the findings and

recommendations. The second annual site review recommends either continuation or cessation of site reviews. Site reviews are no longer required only if TPHC concentrations have attenuated to below the State of Utah screening level of 10,000 µg/g. An alternate corrective measure may be recommended at the 2-year review if it is determined that natural attenuation is not occurring.

Alternative 2 – Excavation and Off-Post Treatment/Disposal

This corrective measures alternative includes excavation of contaminated surface soil to a depth of 3.5 feet bgs using an excavator, backhoe, or similar equipment. Excavation and confirmatory sampling continue until the concentrations of TPHCs are detected below the target level of 10,000 µg/g.

Based on the results of a soil profile analysis (including total waste and TCLP analysis), the excavated soil is transported to an off-post Subtitle C hazardous waste landfill for direct disposal or to a TSDF for treatment prior to disposal. It is assumed that the contaminated soil is sent to a TSDF for pretreatment by incineration to comply with applicable RCRA LDRs. However, the contaminated soil may also be sent to a local asphalt batching plant. The excavated soil is transported and manifested in compliance with applicable regulations. Clean soil from an on-post borrow location is backfilled into the excavated areas, which are then graded to natural conditions.

Evaluation of Alternatives – The proposed corrective measures alternatives for Building 619 (south alley) are evaluated and compared below:

- Technical criteria

- **Performance** – Alternative 2 (excavation and off-post treatment/disposal) immediately reduces the mobility of TPHCs and achieves the target TPHC soil concentration of 10,000 µg/g in less than 1 week. Under Alternative 1 (MNA), TPHC concentrations may be reduced to acceptable levels through natural degradation processes in 1 to 2 years. Alternative 2 provides a higher level of performance by immediately achieving both qualitative and quantitative objectives.
- **Reliability** – Each of the alternatives has been implemented successfully at other sites and is considered to be reliable. Alternative 2 requires no O&M or long-term monitoring; Alternative 1 requires minimal sampling and analysis to document natural attenuation. Some degree of long-term liability may be associated with Alternative 2.
- **Implementability** – Both of these alternatives can be readily implemented at Building 619 (south alley). The building is located within the Maintenance Area of TEAD and is part of the BRAC parcel. Alternatives 1 and 2 are rated high because equipment, materials, and contractors are readily available locally. It is estimated that Alternative 2 could be implemented within 1 week; Alternative 1 may take 1 to 2 years. Subsurface utilities may cause a problem for Alternatives 1 and 2 because of soil sampling/excavation at depths of 3.5 feet.
- **Safety** – Minimal risks are associated with sampling for Alternative 1 and excavation activities for Alternative 2; however, these risks are easily mitigated using conventional safety measures.

The off-post transport of contaminated soil in Alternative 2 presents minor risks to off-post residential communities.

- Human health assessment – There are no unacceptable human health risks or HIs at Building 619 (south alley); however, the TPHC levels warrant action. Because Alternative 2 more efficiently removes TPHCs, it is more protective of overall human health.
- Environmental assessment – The sitewide ecological assessment identified no unacceptable risks to ecological receptors as a result of the contaminants in soil at Building 619 (south alley).

- Administrative feasibility – Alternative 2 readily meets the target concentration of 10,000 µg/g for TPHC-contaminated soil. Alternative 1 is expected to meet this requirement within 1 to 2 years of implementation. Alternative 2 is expected to meet UTSs for petroleum-contaminated soil before the soil is disposed in a landfill; it also complies with UAC R307-12. Both alternatives meet the requirements of UAC R315-101.
- Cost – The estimated costs of Alternatives 1 and 2 are \$50,100 and \$22,800, respectively.

Recommended Alternative – The **excavation and off-post disposal** of TPHC-contaminated soil is the recommended alternative for the Building 619 (south alley) used oil dumpster.

PROPOSED ALTERNATIVES

Of the corrective measures alternatives identified and evaluated for each of the Group B SWMUs, the following are proposed for implementation:

- SWMU 4 (Sandblast Areas)
 - Building 600
Deed restrictions
 - Buildings 615/617
Deed restrictions
- SWMU 19 (AED Demilitarization Test Facility)
Land use restrictions
- SWMU 26 (DRMO Storage Yard)
Deed restrictions
- SWMU 29 (Drum Storage Area)
Deed restrictions
- SWMU 46 (Used Oil Dumpsters)
 - Building 522 (south end)
Excavation and off-post disposal of contaminated soil
 - Building 602 (southwest corner)
Excavation and off-post disposal of contaminated soil
 - Building 611 (northwest corner)
Excavation and off-post disposal of contaminated soil, and deed restrictions
 - Building 619 (south alley)
Excavation and off-post disposal of contaminated soil

TABLE 1

Summary of Comparative Analysis of Corrective Measures Alternatives
Group B Suspected Releases SWMUs

SWMU	Technical Evaluation				Human Health Assessment	Environmental Assessment	Administrative Feasibility	Cost
Corrective Measures Alternatives	Performance	Reliability	Implementability	Safety				
Sandblast Areas (SWMU 4), Building 600								
Deed restrictions (a)	Meets identified CAOs	No O&M or long-term monitoring	Easily implemented under current conditions	No short-term risks	Protects human health	No effect (b)	Meets requirements of EPA and UAC R315-101	\$5,000
Sandblast Areas (SWMU 4), Buildings 615/617								
Deed restrictions (a)	Meets identified CAOs	No O&M or long-term monitoring	Easily implemented under current conditions	No short-term risks	Protects human health	No effect	Meets requirements of EPA and UAC R315-101	\$5,000
AED Demilitarization Test Facility (SWMU 19)								
Land use restrictions (a)	Meets identified CAOs	No O&M or long-term monitoring	Easily implemented under current conditions	No short-term risks	Protects human health	No effect	Meets requirements of EPA and UAC R315-101	\$5,000
DRMO Storage Yard (SWMU 26)								
Deed restrictions (a)	Meets identified CAOs	No O&M or long-term monitoring	Easily implemented under current conditions	No short-term risks	Protects human health	No effect	Meets requirements of EPA and UAC R315-101	\$5,000
Drum Storage Area (SWMU 29)								
Deed restrictions (a)	Meets identified CAOs	No O&M or long-term monitoring	Easily implemented under current conditions	No short-term risks	Protects human health	No effect	Meets requirements of EPA and UAC R315-101	\$5,000
Used Oil Dumpsters (SWMU 46), Building 522 (South End)								
Alternative 1 – Monitored natural attenuation	Meets identified qualitative CAOs; may achieve quantitative CAOs in 1 to 2 years	Annual O&M; effective over the long term and successfully implemented at other sites	Easily implemented under current conditions	Minimal short-term risk to field workers mitigated by engineering and safety controls	No effect (b)	No effect	Meets requirements of EPA and UAC R315-101; target concentration of 10,000 ? g/g for TPHCs in soil (UDEQ, 1997) is likely met in 1 to 2 years	\$37,800
Alternative 2 – Excavation and off-post treatment/ disposal (a)	Meets identified qualitative CAOs; may achieve quantitative CAOs in 1 week	No O&M or long-term monitoring required; effective over the long term and successfully implemented at other sites; some degree of long-term liability	Easily implemented under current conditions	Minimal short-term risk to field workers mitigated by engineering and safety controls; off-post transport presents minor risks to off-post residential communities	Protects human health	No effect	Meets requirements of EPA and UAC R315-101; likely meets UTS before disposal in landfill; complies with UAC R307-12; meets target concentration of 10,000 ? g/g for TPHCs in soil (UDEQ, 1997)	\$15,300

TABLE 1 (cont'd)

SWMU Corrective Measures Alternatives	Technical Evaluation				Human Health Assessment	Environmental Assessment	Administrative Feasibility	Cost
	Performance	Reliability	Implementability	Safety				
Used Oil Dumpsters (SWMU 46), Building 602 (Southwest Corner)								
Alternative 1 – Monitored natural attenuation	Meets identified qualitative CAOs; may achieve quantitative CAOs in 1 to 2 years	Annual O&M; effective over the long term and successfully implemented at other sites	Easily implemented under current conditions	Minimal short-term risk to field workers mitigated by engineering and safety controls	No effect (b)	No effect	Meets requirements of EPA and UAC R315-101; target concentration of 10,000 ? g/g for TPHCs in soil (UDEQ, 1997) is likely met in 1 to 2 years	\$37,800
Alternative 2 – Excavation and off-post treatment/ disposal (a)	Meets identified qualitative CAOs; may achieve quantitative CAOs in 1 week	No O&M or long-term monitoring required; effective over the long term and successfully implemented at other sites; some degree of long-term liability	Easily implemented under current conditions	Minimal short-term risk to field workers mitigated by engineering and safety controls; off-post transport presents minor risks to off-post residential communities	Protects human health	No effect	Meets requirements of EPA and UAC R315-101; likely meets UTS before disposal in landfill; complies with UAC R307-12; meets target concentration of 10,000 ? g/g for TPHCs in soil (UDEQ, 1997)	\$22,600
Used Oil Dumpsters (SWMU 46), Building 611 (Northwest Corner)								
Alternative 1 – Monitored natural attenuation and deed restrictions	Meets identified qualitative CAOs; may achieve quantitative CAOs in 1 to 2 years	Annual O&M; effective over the long term and successfully implemented at other sites	Easily implemented under current conditions	Minimal short-term risk to field workers mitigated by engineering and safety controls	No effect (b)	No effect	Meets requirements of EPA and UAC R315-101; target concentration of 10,000 ? g/g for TPHCs in soil (UDEQ, 1997) is likely met in 1 to 2 years	\$58,800
Alternative 2 – Excavation, off-post treatment/ disposal, and deed restrictions (a)	Meets identified qualitative CAOs; may achieve quantitative CAOs in 1 week	No O&M or long-term monitoring required; effective over the long term and successfully implemented at other sites; some degree of long-term liability	Easily implemented under current conditions	Minimal short-term risk to field workers mitigated by engineering and safety controls; off-post transport presents minor risks to off-post residential communities	Protects human health	No effect	Meets requirements of EPA and UAC R315-101; likely meets UTS before disposal in landfill; complies with UAC R307-12; meets target concentration of 10,000 ? g/g for TPHCs in soil (UDEQ, 1997)	\$44,700

TABLE 1 (cont'd)

SWMU	Technical Evaluation				Human Health Assessment	Environmental Assessment	Administrative Feasibility	Cost
Corrective Measures Alternatives	Performance	Reliability	Implementability	Safety				
Used Oil Dumpsters (SWMU 46), Building 619 (South Alley)								
Alternative 1 – Monitored natural attenuation	Meets identified qualitative CAOs; may achieve quantitative CAOs in 1 to 2 years	Annual O&M; effective over the long term and successfully implemented at other sites	Easily implemented under current conditions	Minimal short-term risk to field workers mitigated by engineering and safety controls	No effect (b)	No effect	Meets requirements of EPA and UAC R315-101; target concentration of 10,000 ? g/g for TPHCs in soil (UDEQ, 1997) is likely met in 1 to 2 years	\$50,100
Alternative 2 – Excavation and off-post treatment/ disposal (a)	Meets identified qualitative CAOs; may achieve quantitative CAOs in 1 week	No O&M or long-term monitoring required; effective over the long term and successfully implemented at other sites; some degree of long-term liability	Easily implemented under current conditions	Minimal short-term risk to field workers mitigated by engineering and safety controls; off-post transport presents minor risks to off-post residential communities	Protects human health	No effect	Meets requirements of EPA and UAC R315-101; likely meets UTS before disposal in landfill; complies with UAC R307-12; meets target concentration of 10,000 ? g/g for TPHCs in soil (UDEQ, 1997)	\$22,800

(a) Preferred alternative.

(b) The human health and ecological risk assessments showed no adverse conditions at the SWMU; this alternative will not affect that status.

WORD NOTEBOOK

Background: Concentrations in environmental samples collected from surrounding areas not affected by site activities.

Base realignment and closure (BRAC): Program under which the U.S. Army facilitates and promotes conversion of excess Army facilities and property to private or public sector reuse.

Blood lead level: The concentration of lead in person's blood, usually measured in micrograms per deciliter.

Cancer risk: The increased likelihood that an individual will develop cancer as a result of site-related exposure over a 70-year lifetime.

Capital cost: Direct construction costs, such as labor and materials, plus indirect costs, such as engineering and permitting.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): Established a program to identify and clean up sites where hazardous substances have been or may have been released to the environment. This Act is commonly known as Superfund.

Contaminants of concern (COCs): Chemicals present at levels above numerical CAOs.

Contaminants of potential concern (COPCs): Chemicals present at levels above background or EPA or State guidelines. Determined during the RFI phase of the RCRA process; all COPCs were included in the human health and ecological RAs.

Corrective action: An action that physically changes the site to meet corrective action objectives. See "management measure."

Corrective action objective (CAO): Goal for protecting human health and the environment. A quantitative CAO is the numerical goal for cleanup of media (e.g., soil, water).

Corrective action permit (CAP): Specifically for TEAD, a permit issued by the State in January 1991 to address the cleanup of contaminated groundwater; required the Army to investigate the possible contamination of 39 SWMUs at TEAD.

Corrective measure: Management control or technology to clean up or minimize the migration of contaminants or to reduce exposure to humans/wildlife.

Corrective measures study (CMS): Component of the RCRA process that identifies, screens, and compares corrective measures alternatives for site-specific contamination and risk.

Covenants, Conditions, and Restrictions (CCRs): Deed restrictions on BRAC property are governed by the Declaration of Covenants, Conditions, and Restrictions for Economic Development Conveyance, November 1998. The CCRs dictate that deed restrictions are enforceable by the U.S. Government, the Redevelopment Agency of Tooele City, and the transferee, or by other designated government agencies.

Decision Document: Presents the preferred corrective measures alternatives for selected

sites; required as public participation responsibilities under RCRA.

Deed restriction: A legally binding notice in a real property deed that limits the actual use of an area; applicable to sites that are part of the BRAC program.

Demilitarization: Removal of equipment and real property from military ownership and use.

Ecological risk assessment (RA): Process to identify all components of the biological system at a defined site, to determine the potential effects of contaminants, and to identify possible remedies for potential problems.

Exposure point concentration (EPC): A statistically derived value representing the likely concentration that an individual is exposed to if he or she is working or living in the area of the SWMU.

Exposure scenario: A combination of an exposure pathway (i.e., release point to receptor) and receptor-specific variables (intake, contact rate, body weight, and exposure frequency).

Federal facility agreement (FFA): Legal document that describes the rules and responsibilities of the Army, EPA, and State of Utah in determining risks and providing agreed-upon corrective action.

Hazard index (HI): Likelihood of adverse health effects from exposure to chemicals that do not cause cancer, HI values less than 1.0 indicate a low likelihood; greater than 1.0 a high likelihood.

Land use restriction: A restriction in land use that limits the actual use of an area; applicable to sites that are not part of the BRAC program. Restrictions are

incorporated into the TEAD master land use plan.

Management measure: Control such as fencing, deed restrictions, or monitoring that includes no physical removal or treatment of identified contaminants.

Media: Elements of the environment, such as soil, sediment, groundwater, surface water, and air.

Master land use plan: Plan maintained by each Federal facility that specifies land use. This document must be reviewed prior to obtaining the programming documents required for approval of new construction.

National Priority List (NPL): Established by EPA, a list that identifies sites eligible for remedial action under CERCLA. EPA has a structured program for evaluating sites and placing them on the NPL.

Noncancer health effects: Adverse health effects other than cancer, which may include weight loss or gain, organ changes, or blood chemistry changes.

Operation and maintenance (O&M) costs: Costs of annual operation and maintenance, including labor and materials.

Polycyclic aromatic hydrocarbon (PAH): Complex organic chemical compound that is a common component of exhaust, smoke, and asphalt.

Present worth: If invested at the start of a project, the amount of money that is sufficient to cover all costs (capital costs and annual O&M) over the planned life of the corrective measure.

RCRA facility investigation (RFI): Component of the RCRA process that

identifies the types, amounts, and locations of contaminants.

RCRA Part B permit: Permit issued by the State for operation of hazardous waste facilities; TEAD maintains a RCRA Part B permit for operation of the sewage lagoons and the open burn areas.

RCRA post-closure permit: Permit issued by the State that defines actions required at a closed RCRA site.

Reasonably anticipated future land use: A realistic assessment of land use from a consensus of community and local planning authorities, based on federal/state land use designation, comprehensive community master plans, and zoning laws or maps.

Receptor: A human, plant, or animal at the receiving end of an exposure pathway.

Resource Conservation and Recovery Act (RCRA): Provides a regulatory program for active sites to prevent mismanagement of hazardous solid waste.

Residual risk: Risk from materials or chemicals left onsite.

Risk assessment (RA): Appraisal of the actual or potential effects of a hazardous waste SWMU on human health and the environment.

“Risk Rule”: State of Utah regulation, “Cleanup Action and Risk-Based Closure Standards” (UAC R315-101).

Semivolatile organic compounds (SVOCs): A class of organic compounds that is analyzed as a group and is comparatively heavier (i.e., less volatile) than VOCs.

Solid waste management unit (SWMU): Area where hazardous substances, pollutants, and contaminants may have been disposed.

Surface soil: The soil layer from 0 to 6 inches below ground surface.

Total petroleum hydrocarbon (TPHC): A hydrogen-bearing carbon-based molecule found in petroleum products such as gasoline, diesel fuel, and oil.

Universal treatment standards (UTS): EPA-defined standards that determine whether materials (e.g., soil) require treatment prior to disposal.

Volatile organic compound (VOC): A class of organic compounds that is analyzed as a group and is comparatively lighter (i.e., more volatile) than SVOCs.

ACRONYMS AND ABBREVIATIONS

AED	Ammunition Engineering Directorate
BRAC	Base Realignment and Closure
CAO	Corrective action objective
CAP	Corrective Action Permit
CCR	Covenants, Conditions, and Restrictions
CDC	Centers for Disease Control and Prevention
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMS	Corrective Measures Study
COC	Contaminant of concern
COPC	Contaminant of potential concern
DRMO	Defense Reutilization and Marketing Office
DSERTS	Defense Site Environmental Restoration Tracking System
EPA	U.S. Environmental Protection Agency
EPC	Exposure point concentration
FFA	Federal Facility Agreement
HI	Hazard index
IWL	Industrial Waste Lagoon
µg/dL	Microgram per deciliter
µg/g	Microgram per gram
NPL	National Priorities List
O&M	Operation and maintenance
PAH	Polycyclic aromatic hydrocarbon
RA	Risk Assessment
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SVOC	Semivolatile organic compound
SWMU	Solid waste management unit

ACRONYMS AND ABBREVIATIONS (cont'd)

TEAD	Tooele Army Depot
TEAD-N	Tooele Army Depot - North Area
TPHC	Total petroleum hydrocarbons
TSDF	Treatment, storage, and disposal facility
UAC	Utah Administrative Code
UDEQ	Utah Department of Environmental Quality
UTS	Universal treatment standards
VOC	Volatile organic compound

GLOSSARY OF EVALUATION CRITERIA

Technical criteria

Performance – evaluates whether the corrective measures alternative can perform its intended function and meet the CAOs, including compliance with Federal, State, and local regulations. This criterion considers site and waste characteristics, and addresses the useful life of each alternative (i.e., the length of time the alternative maintains its intended level of effectiveness).

Reliability – describes the long-term effectiveness and permanence of each alternative. This criterion evaluates the adequacy of the corrective measures technology based on performance at similar sites, O&M requirements, long-term environmental monitoring needs, and residuals management measures.

Implementability – assesses the technical and institutional feasibility of executing a corrective measures alternative, including constructability, permit and legal/regulatory requirements, availability of materials, etc. This criterion also addresses the length of time from implementation of the alternative until beneficial effects are realized.

Safety – considers the potential threats to workers, nearby communities, and the environment during implementation of the corrective measure.

Human health assessment – evaluates the extent to which each alternative protects human health. This criterion considers the classes and concentrations of contaminants left onsite, potential exposure routes, and potentially affected populations. Residual contaminant concentrations are also compared to existing criteria, standards, or guidelines.

Environmental assessment – evaluates short- and long-term effects of the corrective measure on the environment, including adverse impacts to environmentally sensitive areas.

Administrative feasibility – considers compliance with applicable Federal, State, and local environmental and public health standards, requirements, criteria, or limitations.

Cost – presents capital and annual O&M costs for each corrective measures alternative. Capital costs include direct and indirect costs. Annual costs typically include labor, maintenance, energy, and sampling/analysis. For purposes of comparison, costs are presented in terms of *present worth*, which is the current value of a future expenditure. The cost estimates are based on conventional cost estimating guides, vendor information, and engineering judgment.

MAILING LIST

The TEAD Environmental Management Division maintains a mailing list of people interested in activities related to the Group B SWMUs. If you did not receive this Decision Document by mail and want your name added to the mailing list, or if you want your name deleted, please indicate below and mail the completed form to:

Larry McFarland/SDSTE-IRE
Environmental Management Division
Tooele Army Depot, Building T8
Tooele, UT 84074-5000

Name: _____

Affiliation (if any): _____

Address: _____

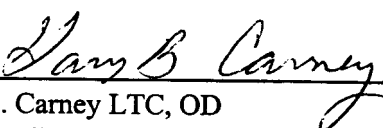
City: _____ State: _____ Zip Code: _____

☐ Please add my name to the mailing list.


☐ Please delete my name from the mailing list.

APPROVAL OF THE SELECTED ALTERNATIVE AT SWMU 4

The selected alternatives for Buildings 600 and 615/617 of the Sandblast Areas (SWMU 4) are deed restrictions to prevent residential use. The total cost of this action is estimated at \$5,000 for each site within SWMU 4. The appropriate approval authority for this action is the Tooele Army Depot Installation Commander.



Gary B. Carney LTC, OD
Commanding
Tooele Army Depot



Date

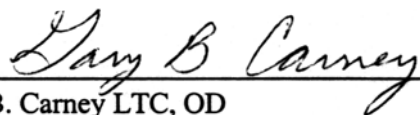
DECLARATION STATEMENT FOR SWMU 4

Because this corrective measure will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, deed restrictions will ensure continued adequate protection of human health and the environment.

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APPROVAL OF THE SELECTED ALTERNATIVE AT SWMU 19

The selected alternative for the AED Demilitarization Test Facility (SWMU 19) is land use restrictions to prevent residential use. The total cost of this action is estimated at \$5,000. The appropriate approval authority for this action is the Tooele Army Depot Installation Commander.



Gary B. Carney LTC, OD
Commanding
Tooele Army Depot



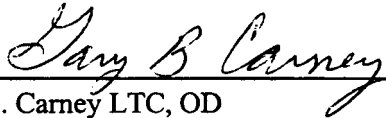
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DECLARATION STATEMENT FOR SWMU 19

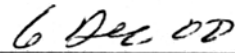
Because this corrective measure will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, land use restrictions will ensure continued adequate protection of human health and the environment.

APPROVAL OF THE SELECTED ALTERNATIVE AT SWMU 26

The selected alternative for the DRMO Storage Yard (SWMU 26) is deed restrictions to prevent residential use. The total cost of this action is estimated at \$5,000. The appropriate approval authority for this action is the Tooele Army Depot Installation Commander.



Gary B. Carney LTC, OD
Commanding
Tooele Army Depot



Date

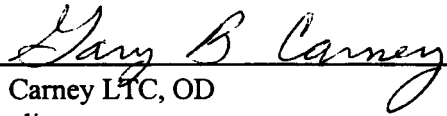
DECLARATION STATEMENT FOR SWMU 26

Because this corrective measure will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, deed restrictions will ensure continued adequate protection of human health and the environment.


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APPROVAL OF THE SELECTED ALTERNATIVE AT SWMU 29

The selected alternative for the Drum Storage Area (SWMU 29) is deed restrictions to prevent residential use. The total cost of this action is estimated at \$5,000. The appropriate approval authority for this action is the Tooele Army Depot Installation Commander.



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Commanding
Tooele Army Depot



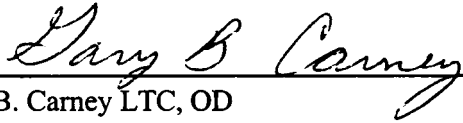
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DECLARATION STATEMENT FOR SWMU 29

Because this corrective measure will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, deed restrictions will ensure continued adequate protection of human health and the environment.

APPROVAL OF THE SELECTED ALTERNATIVE AT SWMU 46

The selected alternative for the Used Oil Dumpsters at Buildings 522, 602, 611, and 619 (SWMU 46) is excavation and off-post treatment/disposal. In addition, the selected alternative for Building 611 includes deed restrictions to prevent residential use. The total cost of the actions for Buildings 522, 602, 611, and 619 are \$15,300, \$22,600, \$44,700, and \$22,800, respectively. The appropriate approval authority for this action is the Tooele Army Depot Installation Commander.



Gary B. Carney LTC, OD
Commanding
Tooele Army Depot



Date

DECLARATION STATEMENT FOR SWMU 46

The selected corrective measure for the Used Oil Dumpsters at Buildings 522, 602, 611, and 619 is protective of human health and the environment, attains Federal and State requirements, and is cost effective. This corrective measure satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume as a principal element and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The selected corrective measure for Building 611 only will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure. Deed restrictions will ensure continued adequate protection of human health and the environment.

Tooele Army Depot

Decision Document

Group B SWMUs